

حمل الآن

مجاناً وحصرياً

المراجعة رقم (1)

اختبار شهر اكتوبر



Test 1

On building units to the relation between numbers of subatomic particles

15 Marks

- 1 [A] Write the scientific term [or name] of each of the following statements:

4 Marks

- (1) Anything that has mass and occupy space. *(Nasser / Bani Suef 25)* (.....)
- (2) One of the subatomic particles whose charge is equal to that of an electron in amount but opposite in type. *(Nubariya / Beheira 25)* (.....)
- (3) Chemical compounds used to improve agricultural production. (.....)
- (4) The scientist who proposed the first scientific theory about the atom, explaining its indivisibility. *(Sinbalaween / Dakahlia 25)* (.....)

[B] Give reason : The symbol of sodium is (Na), not (So) as expected.

1 Mark

- 2 [A] Complete the following statements :

4 Marks

- (1) The smallest subatomic particle according to the mass is and its mass is equal to
- (2) Phosphorus element is necessary for plants , while element is necessary for the healthy growth of plants.
- (3) The chemical symbol of carbon is , while the chemical symbol for iron is *(Etai Al-Baroud 25)*
- (4) The nucleus of an atom is positively charged because it contains positively charged and neutrally charged

[B] An element with atomic number 11 and mass number 23, calculate:

1 Mark

- (1) Number of electrons.
-

- (2) Number of neutrons.
-

- 3 [A] The symbol for potassium is represented by the symbol $^{39}_{19}\text{K}$ *(Ettal/Fayoum 25)*

4 Marks

From the previous statement, put [✓] or [x] in front of the following sentences:

- (1) Number of protons = Number of neutrons in the nucleus of a potassium atom. ()
- (2) Number of protons in the nucleus of a potassium atom = Number of electrons revolving around the nucleus. ()

- (3) The mass number of the potassium atom is equal to 19 ()
- (4) The nucleus of a potassium atom contains 20 neutrally charged particles. ()

[B] What does it mean when we say that the atomic number of chlorine is 17?

1 Mark

Test 2

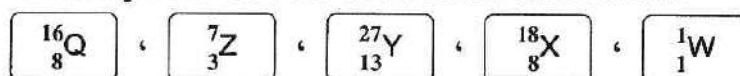
On energy levels to isotopes

15 Marks

1 [A] Complete the following statements with the appropriate symbols from the following hypothetical element symbols in the list below :

4 Marks

«The symbol can be used more than once.»



- (1) Electrons revolve around the nucleus of the atom of element in three energy levels.
- (2) The number of nucleons in the nucleus of the atom of element is twice its atomic number.
- (3) The nucleus of the atom of element does not contain neutrons.
- (4) , are considered to be isotopes of one element.

[B] What are the results of : The electron moving away from the nucleus (In terms of : the electron's energy)?

1 Mark

(Qanater / Giza 25)

2 [A] Choose the correct answers:

4 Marks

- (1) The outermost energy level of any atom does not contain more than
 (a) 2 electrons. (b) 8 electrons. (c) 18 electrons. (d) 32 electrons.
- (2) An atom of an element whose nucleus contains 12 neutrally charged particles and the number of electrons that revolve in its energy level M is equal to the number of electrons in energy level K. So the number of nucleons in the nucleus is

(Hamoul / Kaf El-Sheikh 25)

- (a) 12 (b) 14 (c) 23 (d) 24

(3) diagram shows the outermost energy level of carbon atom $^{12}_6\text{C}$



(4) Deuterium is considered one of the isotopes of element.

(Obour / Qalyubia 25)

- (a) carbon (b) oxygen (c) nitrogen (d) hydrogen

[B] Compare between : $_{16}\text{S}$ element and $_{7}\text{N}$ element

1 Mark

(In terms of: electron configuration -number of energy levels occupied by electrons).

(Zohor / Port Said 25)

3 [A] (1) Mention the number refers to each of the following :

2 Marks

1. The number of electrons that completely fill the energy level M (.....)
2. The number of energy levels occupied by electrons in the atom of an element whose nucleus contains 5 positive particles. (.....)

(2) Put [✓] in front of the correct statement and an [x] in front of the wrong statement, with correction:

2 Marks

1. The number of electrons that saturate the main energy level L is determined by the relation n^2 ()
2. The energy level M is filled with electrons before the energy level N ()

[B] An element with a mass number 23 and its electrons revolve around its nucleus in three energy levels. The number of electrons in its outermost energy level is equal to half the number of electrons in its first energy level.

1 Mark

Calculate the atomic number of the element.

Test 3

On whole lesson

15 Marks

1 [A] Choose the correct answer:

2 Marks

(1) The scientist who proposed the first experimental model of the atom was

(West / Cairo 25)

- (a) Rutherford. (b) Moseley. (c) Mendeleev. (d) Dalton.

(2) Each of the following represent an element and its correct chemical symbol, except

(Qafi / Qena 25)

- (a) nitrogen Na (b) silicon Si (c) fluorine F (d) potassium K

[B] (1) What are the results of:

2 Marks

1. The atom of an element does not contain neutrons.

(Qanater / Giza 25)

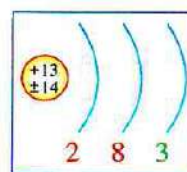
2. A green plant does not obtain nitrogen.

(Nubariya / Baheira 25)

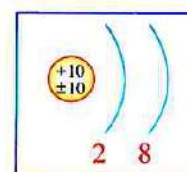
(2) Study the two opposite figures, then deduce :

The mass number for each element.

.....



(1)



(2)

1 Mark

2 [A] Write the chemical symbol for each of the following elements, including the numbers A and Z:

2 Marks

1. Element (X) has a nucleus containing 65 nucleons and 29 electrons.

(.....)

2. Element (Y) has a nucleus containing 20 neutrons and 20 protons.

(.....)

[B] The carbon -14 isotope is symbolized as $^{14}_6\text{C}$:

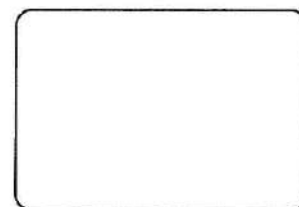
3 Marks

(1) What is meant by isotopes?

(2) Draw a diagram showing the electron configuration of the atom of this isotope.

(3) Determine the number of protons and neutrons in the nucleus of this isotope.

.....



3 [A] Correct the underlined word[s] :

2 Marks

(1) The number of neutrons is equal to the number of protons in the nucleus of a protium atom.

(.....)

(2) The outermost energy level of oxygen ${}_8\text{O}$ contains 2 electrons.

(.....)

[B] The opposite figure shows the number of energy levels in an atom.

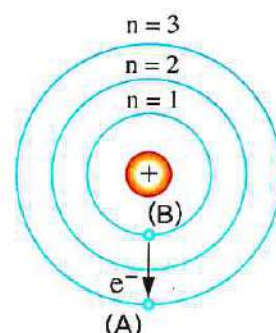
3 Marks

Answer the following :

(1) Write the symbols for the first three energy levels, and mention the mathematical relation used to calculate the number of electrons that saturate each level.

(2) Which is greater: The difference in energy between the energy levels $(n = 2), (n = 3)$ or between energy levels $(n = 1)$ and $(n = 2)$? And why?

(3) What happens to the energy of the electron when it moves from point (B) to point (A)?



(Kaft / Qena 25)

Test 1

On attempts to classify elements and the modern periodic table

15 Marks

1 [A] Choose from columns (B) and (C) what suit them in column (A):

3 Marks

(A)	(B)	(C)
(1) Scientist Mendeleev	(1) Proposed the first experimental model of the atom	(1) He added a group of inert gases to the table.
(2) Scientist Moseley	(2) Ordered the elements in his table in an ascending order according to their atomic masses	(2) He discovered that the nucleus of an atom contains positively charged protons.
(3) Scientist Rutherford	(3) Proposed the first scientific theory about the atom.	(3) He discovered that the properties of elements are repeated in a periodically with the start of each new row.
	(4) Ordered the elements in his table in an ascending order according to their atomic numbers.	(4) He added the group of halogens to the table.

(1) →

(2) →

(3) →

[B] Explain : Calcium ($_{20}\text{Ca}$) is one of the alkaline earth elements. (Nabarouh/Dakahlia 25)

2 Mark

2 [A] Correct the underline word[s] in the following sentences :

4 Marks

(1) The elements of group 7A are called the alkali. (Baltim / Kafr El-Sheikh 25) (.....)(2) The number of elements in the modern periodic table is 92 elements. (.....)(3) The elements of d-block are known as the noble elements. (Matai / Minia 25) (.....)(4) Neon is the only liquid metal in the periodic table. (Mit Ghamr / Dakahlia 25) (.....)

[B] What is the scientific basis for classifying elements in the modern periodic table?

1 Mark

3 [A] Extract the odd word [or symbol], then mention what connects the rest of the words.[or symbols]:

4 Marks

(1) Oxygen / Nitrogen / Helium / Hydrogen. (Dulenjat / Beheira 25) (.....)

(2) Boron / Silicon / Bromine / Germanium. (West / Cairo 25) (.....)

(3) Fluorine / Chlorine / Iodine / Magnesium. (West / Cairo 25) (.....)

(4) $_{12}\text{Mg}$ / $_{6}\text{C}$ / $_{3}\text{Li}$ / $_{11}\text{Na}$ (West / Alexandria 25) (.....)

- [B] Compare between group 1A and group 0 in the modern periodic table.
(In terms of: group name - block to which it belongs).

1 Mark

Test 2 Periodic table and electron configuration of elements and their properties

15 Marks

- 1 [A] Correct the underline word[s] in the following sentences :

4 Marks

- (1) The elements of group 1A are similar to the elements of group 5A in valency. (Manfalut / Assiut 25) (.....)
- (2) The Lewis dot structure of the oxygen atom ${}_8\text{O}$ contains six individual electrons. (Hamoul / Kfar El-Sheikh 25) (.....)
- (3) The chemical activity of halogen elements increases from top to bottom by increasing atomic number. (Damanhur / Beheira 25) (.....)
- (4) Melting point and boiling point of halogens decrease by increasing atomic number. (Minia / Minia 25) (.....)

- [B] The opposite figure represents a part of the modern periodic table: (Tamiya / Fayoum 25)

- (1) Identify the location of the Ar element in the table.

1 Mark

- (2) What is the valency of element (B)?

A								
B	C	D				E	${}_{17}\text{Cl}$	${}_{18}\text{Ar}$

- 2 [A] Choose the correct answer:

4 Marks

- (1) Number of single electrons in the outermost energy level of noble gases (Helwan/Cairo 25)
 - (a) Zero
 - (b) 1
 - (c) 4
 - (d) 8
- (2) A monovalent nonmetal element located in the second period is in the block (Kafr Al-Dawar / Beheira 25)
 - (a) s
 - (b) p
 - (c) d
 - (d) f
- (3) Element (X) is one of the alkaline earth elements and is located in the second period, its atomic number is (Shubra/ Cairo 25)
 - (a) 4
 - (b) 7
 - (c) 5
 - (d) 8
- (4) The opposite section represents a part of the periodic table. Which statement of the following is correct? (Hamoul / Kfar El-Sheikh 25)
 - (a) Element (A) has an atomic number equals 4.
 - (b) Element (B) is in period 5
 - (c) Element (C) has less atomic number than element (B).
 - (d) Element (D) has a valency of zero.

		X			
	A				D
B			C		

«The letters represent virtual symbols.»

[B] What are the consequences of: Increasing the atomic number for elements in the same group from top to bottom (regarding the radius)?

1 Mark

(Abu Suweir / Ismailia 25)

3 [A] (1) Give one example for each of the following:

2 Marks

1. Inert gas.

(Waraq / Giza 25) (.....)

2. A monovalent metal.

(Fayd / Ismailia 25) (.....)

(2) Complete the following statements:

2 Marks

1. An element from the alkali metals is in period 3 and has an atomic number of, and another element from the halogens in the same period has an atomic number of

(Ashmoun / Menoufia 25)

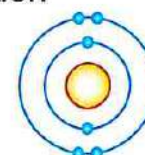
2. Element ${}_{19}^{39}\text{K}$ is located in period and group

(Manzala / Dakahlia 25)

[B] Study the opposite figure, which shows the electron configuration of the atom of element (X) in the modern periodic table.

Then, determine the atomic number of the element (Y) that follows it in the same period.

(Talkha / Dakahlia 25)



1 Mark

The element (X)

Test 3

On whole lesson

15 Marks

1 [A] Choose the correct answer :

2 Marks

(1) All of the following elements are metalloids, except

(Fouh / Kfar El-Sheikh 25)

(a) silicon.

(b) sulphur.

(c) boron.

(d) arsenic.

(2) The opposite table shows the melting and boiling points of four different substances (W), (X), (Y) and (Z).

Which of these substances are in a liquid state at 25°C ?

(a) (Y) only.

(b) (Y) and (Z) only.

(c) (Z) only.

(d) (W) and (X) only.

Substance	Melting point	Boiling point
(W)	34°C	55°C
(X)	32°C	85°C
(Y)	21°C	180°C
(Z)	9°C	31°C

[B] Deduce the relation between each of the following:

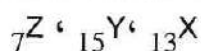
3 Marks

(Minya Al-Nasr / Dakahlia 25)

(1) Number of energy levels and position of the element in the periodic table according to its period.

(2) The ratio between the number of groups in the periodic table and the number of its periods.

(3) Two elements with similar chemical properties from the following:



2 [A] Complete the following statements with the appropriate word[s]:

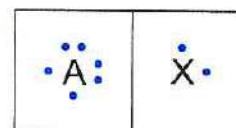
2 Marks

(1) The elements of the block are located at the bottom of the periodic table while the elements of block are located in the middle of the table.

(Tami Al-Amid / Dakahlia 25)

(2) In the alkali group, the atomic radius of metal is less than that of potassium metal, and greater than that of metal.

[B] The opposite figure shows Lewis dot structure of the two atoms of elements [X] and [A] which are located in period 2 of the modern periodic table:



3 Marks

(1) Mention the number of the group in which element (A) is located in the periodic table.

(Zohor / Port Said 25)

(2) Deduce the valency of two elements.

3 [A] Put (✓) in front of the correct statements and [X] in front of the wrong ones:

2 Marks

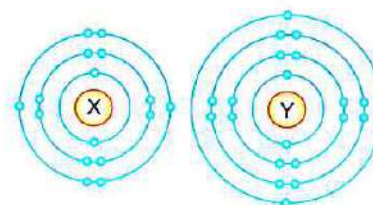
(1) Inert gases are stable because their outermost energy level is complete with electrons.

(Esna / Luvor 25) ()

(2) f-block contains all metallic elements except mercury (Hg).

()

[B] The two opposite figures show the electron configuration of the atoms of elements [X] and [Y]:



3 Marks

(1) Draw the Lewis dot structure for each of them.

(Talkha / Dakahlia 25)

(2) Determine the block of element (Y).

(3) Mention the type and valency of element (X).

Test 1

On classification of substances

15 Marks

4 Marks

1 [A] Complete the following statements :

- (1) From mixtures whose components can be distinguished by the naked eye is a mixture , while mixture whose components cannot be distinguished by the naked eye.
- (2) When red mercury oxide is heated, it is decomposed into a liquid and an diatomic gas. *(Nubaria / Beheira 25)*
- (3) is considered an example of an organic compound molecule, while is an example of a polyatomic molecule of an element.
- (4) Vitamin..... regulates the levels of calcium and in the blood. *(Baltim / Kafr El-Sheikh 25)*

[B] Give reason for : Iron filings can be easily separated from flour. *(Qena / Qena 25)*

1 Mark

2 [A] Correct the underlined words :

4 Marks

- (1) A molecule of magnesium carbonate (MgCO_3) consists of four atoms and five elements. *(Beba / Beni Suef 25)* (.....)
- (2) Stirring sodium chloride in water produces a heterogeneous mixture. *(Nuzha / Cairo 25).* (.....)
- (3) Voltmeter device is used in the electrolysis of water. *(Montazah / Alexandria 25)* (.....)
- (4) A compound cannot be decomposed into simpler forms. *(Minia / Minia 25)* (.....)

[B] Compare between : Homogeneous mixture and heterogeneous mixture. (In terms of: separation methods). *(Gomrok / Alexandria 25)*

1 Mark

3 [A] Choose the correct answer :

4 Marks

- (1) Which of the following cannot be separated into its components by physical or chemical methods? *(Agoza / Giza 25)*
- (a) Calcium. (b) Water.
- (c) Table salt in water. (d) Mercury oxide.

(2) Which of the following represents both the formula and number of elements in nitric acid molecule?

(Qantara West / Ismailia 25)

- (a) HNO_3 consists of three elements.
- (b) HNO_3 consists of five elements.
- (c) HNO_2 consists of four elements.
- (d) HNO_2 consists of six elements.

(3) What is the number of metal atoms in one molecule of Egyptian blue dye $\text{CaCuSi}_4\text{O}_{10}$?

(East / Fayoum 25)

- (a) 2
- (b) 3
- (c) 4
- (d) 5

(4) The main element in organic compounds is

(Warak / Giza 25)

- (a) nitrogen.
- (b) oxygen.
- (c) carbon.
- (d) iron.

[B] Classify the following substances into two groups of elements and compounds:

1 Mark

(H_2SO_4 / N_2 / CO_2 / Cu)

(Hamoud / Kafr El-Sheikh 25)

Test 2 On distinguishing substances and their uses based on their properties

15 Marks

1 [A] Write the scientific term of each of the following statements :

4 Marks

- (1) A metalloid that conducts electricity less than metals and more than nonmetals. (.....)
- (2) Properties of a substance that can be observed and measured in some cases. (.....)
- (3) A transparent material that 99.8% of its composition is air and has excellent insulating properties. (.....)
- (4) An alloy made of iron with some added elements and it is resistant to rust. (Qena / Qena 25) (.....)

[B] When heating a green substance in a test tube, carbon dioxide gas is evolved, and a black substance remains in the tube :

1 Mark

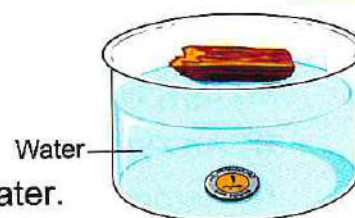
- (1) Is the green substance an element or a compound ?
.....
- (2) Does heating the green substance indicate a physical property or a chemical property ?
.....

2 [A] Choose the correct answer :

4 Marks

(1) The opposite figure illustrates one of the physical properties used to distinguish between some substances. This property is

- (a) viscosity. (b) density.
(c) hardness. (d) solubility in water.



(2) Which of the following gases is used to fill car tires instead of air?

- (a) Helium. (b) Hydrogen.
(c) Nitrogen. (d) Carbon dioxide.

(3) Litmus paper turns into color when it is placed in toothpaste.

(Port Said / Port Said 25)

- (a) blue (b) red (c) green (d) purple

(4) All of the following describe helium, except that it is

- (a) an inert gas. (b) less density than air.
(c) flammable. (d) used in filling balloons.

[B] Give reason for : Aluminum – Titanium alloy has a great importance

1 Mark

(Shebin El-Kom / Menoufia 25)

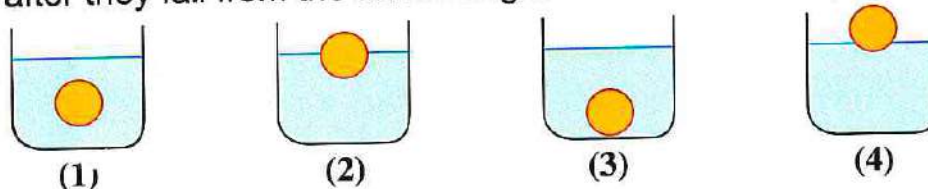
3 [A] Put (✓) in front of the correct statements and (X) in front of the wrong ones and correct them:

4 Marks

- (1) The viscosity of water is equal to that of honey. ()
(2) Two different solutions can be chemically distinguished by adding a reagent to each of them separately. ()
(3) Cotton is used in making jackets for researchers in cold regions. ()
(4) Lemon is a substance that turns litmus paper red. ()

[B] The following figure shows the position of 4 identical balls made of the same material after they fall from the same height in four different liquids:

1 Mark



Arrange the liquids from lowest viscosity to highest viscosity.

Test 3

On Whole lesson

15 Marks

1 [A] Correct the underlined words :

2 Marks

(1) Filtration used to separate the components of a solution of a solid substance dissolved in water. (.....)

- (2) Regulating calcium and phosphorus levels in the blood prevents diabetes.

(.....)

[B] Mention one use of each of the following :

(1) Egyptian blue dye :

(Nagaa Hamadi / Qena 25)

(2) An aluminum-titanium alloy :

(Beetroot / Matrouh 25)

(3) Aerogel in terms of its ability of insulation :

(Ayat / Giza 25)

2 [A] Mention one example of each of the following :

(1) An organic compound molecule contains several thousands of atoms :

2 Marks

(2) A physical property used to distinguish between substances :

(Matraya / Cairo 25)

[B] Give reasons for the following:

(1) Seawater is considered a homogeneous mixture.

(Qena / Qena 25)

(2) Mercury oxide molecule is considered a compound, while mercury molecule is an element.

(Damanhur / Beheira 25)

(3) Car tires are filled with nitrogen gas.

(Ismailia / Ismailia 25)

3 [A] Complete the following table :

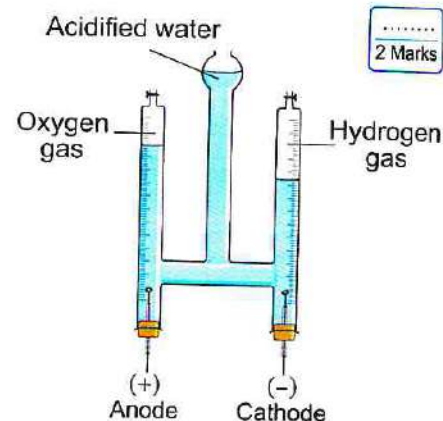
(Adwa / Minia 25)

Name of the compound	Number of elements	Number of atoms
(1) CuO	(1).....	(2).....
(2) H ₂ SO ₄	(3).....	(4).....

2 Marks

[B] (1) Study the opposite figure, then answer :

1. What is the name of the device shown in the figure, and what is it used for ?



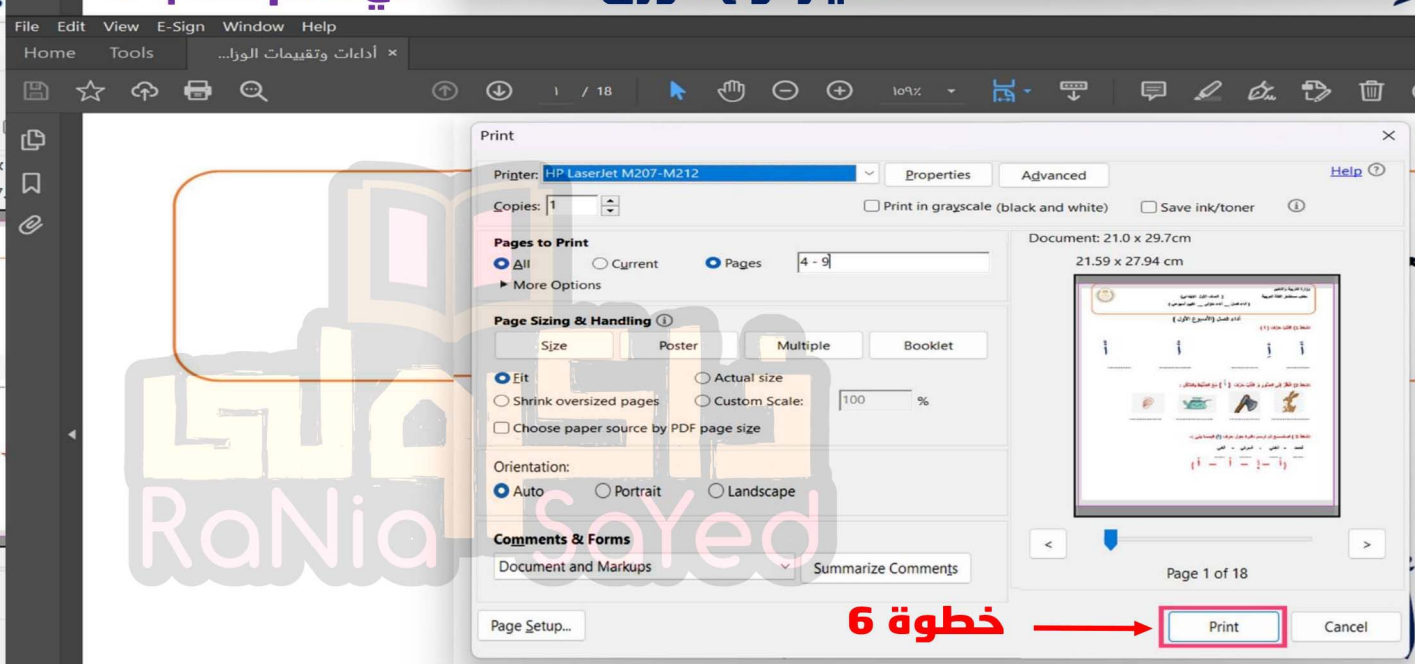
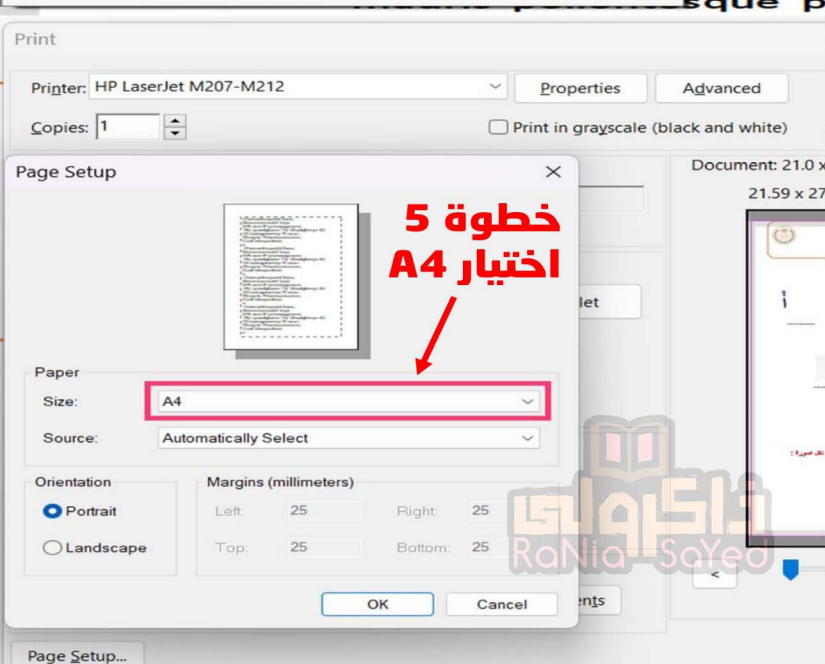
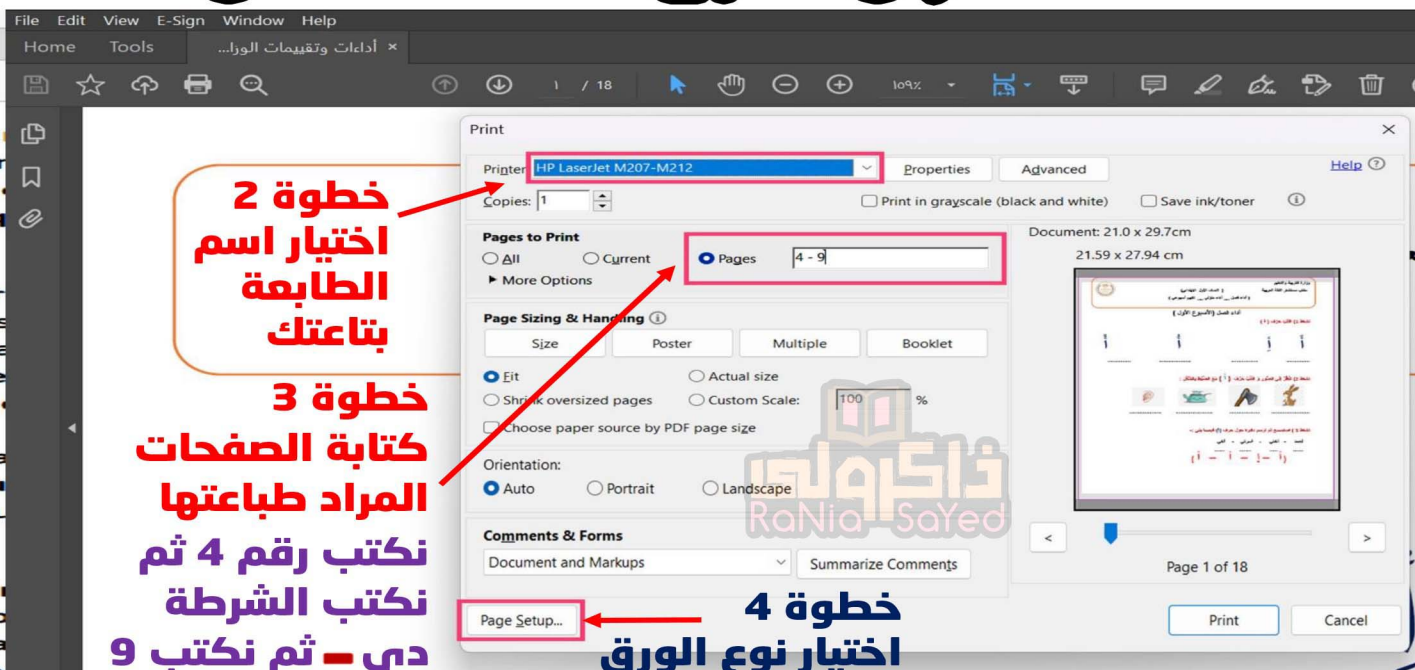
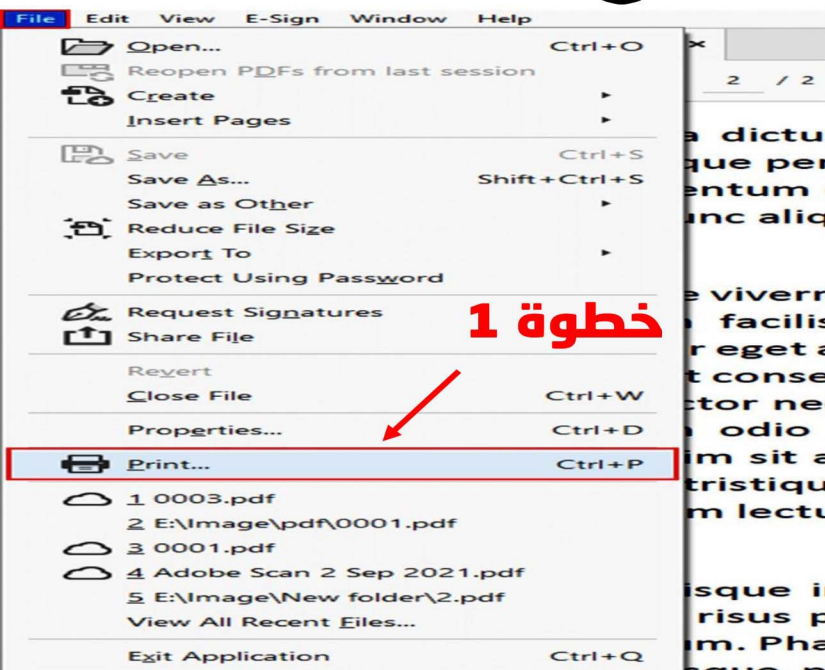
2 Marks

2. Classify each of oxygen, hydrogen and water into molecules of elements and molecules of compounds, **with explanation**

(2) **Compare between:** Organic compounds and inorganic compounds
(In terms of: the definition - an example of each of them).

1 Mark

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجاناً وحصرياً

المراجعة رقم (2)

اختبار شهر اكتوبر



October Revision

Q1. Choose the correct answer:

- 1 Sphinx statue consists of rocks made up of
a. sand stone **b.** limestone **c.** granite **d.** basalt
- 2 The model of is the first model for the atom on an experimental base.
a. Dalton **b.** Mendeleev **c.** Moseley **d.** Rutherford
- 3 The atom consists of positively charged
a. electrons **b.** neutrons **c.** nucleus **d.** levels
- 4 Negatively charged particles that revolve around the nucleus are
a. protons **b.** electrons **c.** neutrons **d.** particles
- 5 The mass of subatomic components is measured in atomic mass units, and its symbol is
a. U **b.** Y **c.** W **d.** H
- 6 The chemical symbol of potassium is
a. B **b.** P **c.** K **d.** Po
- 7 The chemical symbol of lead element is
a. Bp **b.** Pb **c.** Le **d.** Bb
- 8 NPK fertilizer consists of element that helps to make the plant leaves green.
a. K **b.** N **c.** P **d.** F
- 9 element is necessary for strengthen roots of plants.
a. K **b.** N **c.** P **d.** F
- 10 The number of positive protons represents the
a. atomic number
b. mass number
c. number of energy levels
d. number of elements

- 11 Inside the nucleus of the atom, mostly the number of is more than or equal the number of protons.
a. atomic number b. electrons c. neutrons d. particles
- 12 An element contains 20 nucleons and the number of negative charges is 9 so the number of neutral charges is
a. 12 b. 10 c. 11 d. 9
- 13 An atom of an element in which electrons revolves around it at three energy levels, and the outermost energy level contains 2 electrons, so its atomic number is
a. 2 b. 12 c. 14 d. 8
- 14 An element's outermost energy level (L) contains a number of electrons equal to the number of electrons in the level (K), so its atomic number is
a. 4 b. 6 c. 8 d. 12
- 15 An element's outermost in which energy level (M) contains one electron, so its atomic number is
a. 3 b. 9 c. 11 d. 19
- 16 Deuterium is considered one of the isotopes of element.
a. oxygen b. nitrogen c. hydrogen d. carbon
- 17 is considered one of homogeneous mixtures.
a. A mixture of iron filings and sawdust
b. Salt solution
c. A mixture of oil with water
d. A mixture of sand and water
- 18 From molecules that consists of the same type of atoms is molecule.
a. HCl b. H_2O c. O_2 d. NH_3
- 19 can be decomposed through electrolysis by using Hoffman's voltammeter.
a. Water b. Mercuric oxide c. Carbon d. Nitric acid

- 20 We can distinguish between through thermal conductivity.

a. iron and copper b. rubber and plastic
c. copper and rubber d. silver and iron
- 21 Salt solution can be separated through

a. filtration process b. magnetic attraction
c. evaporation and condensation d. precipitation process
- 22 is from polyatomic element molecules.

a. Carbon b. Oxygen c. Ozone d. Iron
- 23 is from substances that can be separated by chemical methods.

a. Red mercuric oxide b. Table salt solution
c. A mixture Iron filings and sand d. A mixture of oil and water
- 24 The molecular formula for a compound that consists of one nitrogen atom, one hydrogen atom, and three oxygen atoms is

a. HO₃N b. HNO₃ c. O₃HN d. NHO₃
- 25 The toothpaste is colored with color on adding a litmus paper on it.

a. blue b. red c. violet d. green
- 26 Balloons can be filled with gas.

a. oxygen b. nitrogen c. chlorine d. helium
- 27 is considered from the compounds.

a. Ozone b. Iron
c. Mercury d. Egyptian indigo dye
- 28 The number of atoms in sulphuric acid molecule H₂SO₄

a. 5 b. 8 c. 7 d. 6
- 29 The molecules of the following organic compounds consists of thousands of atoms except

a. hemoglobin b. plastic polymer
c. methane d. vitamin D

Q2. Put (✓) or (X):

- 1 The atom is the building unit of the matter. ()
- 2 Electrons are found inside the nucleus. ()
- 3 There are four main energy levels around the nucleus. ()
- 4 The charge and magnitude of protons are larger than electrons. ()
- 5 The chemical symbol of sodium element is S. ()
- 6 The atomic mass is larger than the atomic number for all elements. ()
- 7 The third energy level is saturated with 18 electrons. ()
- 8 The energy level K is the largest level in energy. ()
- 9 The electronic configuration for an element that contains 15 neutrons and 14 protons has three energy levels. ()
- 10 The outermost energy level of magnesium contains 2 electrons. ()

Q3. Correct the underlined words:

- 1 Methane is considered one of inorganic compounds. (.....)
- 2 Oxygen is considered from mixtures. (.....)
- 3 Table salt solution can be separated by filtration. (.....)
- 4 Helium gas is used in filling car tires. (.....)
- 5 Density and melting points from the chemical properties of the matter. (.....)
- 6 Heterogeneous mixtures can't be separated by physical means. (.....)
- 7 From organic compounds is NaHCO₃. (.....)

Q4. Write the scientific term:

- 1 It is everything that has a mass and occupies a space. (.....)
- 2 The building unit of the matter. (.....)
- 3 Tiny particles can't be subdivided. (.....)
- 4 The scientist who made the first scientific theory about the atom.
(.....)
- 5 The space that contains protons and neutrons. (.....)
- 6 Paths in which electrons revolve around the nucleus. (.....)
- 7 Particles that include protons, neutrons and electrons. (.....)
- 8 Positively charged particles located inside the nucleus. (.....)
- 9 Particles whose mass can be neglected while their charge can't.
(.....)
- 10 Particles whose charge can be neglected while their mass can't.
(.....)
- 11 Chemical compounds used in improving the agricultural productivity.
(.....)
- 12 A type of fertilizer contains nitrogen, phosphorus and potassium.
(.....)
- 13 An element necessary for greening of plant leaves. (.....)
- 14 An element necessary for strengthening roots. (.....)
- 15 An element necessary for healthy plant growth. (.....)
- 16 Number of protons found inside the nucleus of the atom.
(.....)
- 17 The summation of numbers of both protons and neutrons.
(.....)
- 18 The difference between atomic mass and atomic number.
(.....)

- 19 Different forms of elements have the same atomic number and different atomic masses. (.....)
- 20 The simplest pure form of matter where its components cannot be separated by physical or chemical methods. (.....)
- 21 Materials composed of two or more substances that are not chemically combined. (.....)
- 22 Mixtures whose components can be distinguished with the naked eye. (.....)
- 23 A pure substance is formed as a result of the chemical combination of two or more elements in a fixed mass ratio, and its components can be separated by various methods. (.....)
- 24 A semi-metal used in the manufacture of electronic chips. (.....)
- 25 An alloy that maintains its strength at high temperatures and is used in the manufacture of military aircraft structures. (.....)
- 26 A symbolic formula that expresses the type and number of atoms of the elements that make up the molecule. (.....)
- 27 Properties that can be observed and some of them can be measured. (.....)
- 28 The properties that only appear when a chemical reaction occurs that leads to a change in the shape and composition of the substance. (.....)

Q5. Complete the following sentences:

- 1 The electrons revolve around the with a very high speed.
- 2 The chemical symbol of potassium is
- 3 The chemical symbol for the element is Ag.
- 4 NPK fertilizer consists of which is necessary to strengthen the roots.

- 5 are chemical compounds used in improving agricultural production.
- 6 An element's atomic number is 8 so its electronic configuration is
- 7 The outermost energy level for any atom doesn't contain more than electrons
- 8 The second energy level is
- 9 The number of main energy levels is
- 10 The number of electrons necessary to saturate the first four energy levels can be determined by the mathematical relation
- 11 An element's nucleus contains 27 nucleons and the number of neutrons is 14 so the number of electrons is
- 12 are different forms for one element having the same atomic number and different in number.
- 13 Each period ends with the elements of group and this group is preceded by group
- 14 The second period starts with elements of group and ends with elements of group
- 15 The modern periodic table consists of periods and groups.
- 16 The modern periodic table consists of blocks.
- 17 Elements of block-s are located on the of the periodic table and consist of groups while elements of are located at the bottom of the periodic table.
- 18 The Nobel gases are located in the block and contain group(s).
- 19 The elements of block are located in the middle of the periodic table and it contains Group(s).

- 20 The boiling point of bromine is the boiling point of chlorine.
- 21 The elements of the same groups have the same and
- 22 The scientific basis in which Mendeleev's periodic table is made was arranging elements according to their
- 23 The scientific basis in which Moseley's periodic table is made was arranging elements according to their
- 24 The scientific basis in which the modern periodic table is made was arranging elements according to their
- 25 The scientist Moseley discovered that the properties of the elements are related to their not to as Mendeleev believes.
- 26 The block-p starts with group and ends with group
- 27 The elements of halogens and Nobel gases are located in block
- 28 All elements of block are metals except that is considered a non-metal gas.
- 29 The number of elements in the first period is while the number of elements in in the fouth period is
- 30 Transition elements start to appear from period number and their block consists of groups.
- 31 The chemical activity of alkali metals as we move from up to down while the chemical activity of halogens as we move from up to down.
- 32 The atomic radius is measured by a unit called
- 33 The atomic radius is proportional with the atomic number of the element in the same period.

- 34 Silicon and germanium are considered as
- 35 are substances that cannot be separated into their components by chemical or physical methods.
- 36 Water can be separated into its components using a device called
- 37 Water is decomposed by electrolysis into two elements and
- 38 Mixtures are classified into and
- 39 mixtures cannot be distinguished by the naked eye.
- 40 All matters are composed of small, similar units called
- 41 Molecules of consist of atoms of the same type, while molecules of consist of atoms for different elements
- 42 The number of atoms in a single molecule in some organic compounds may reach several thousand, as in and
- 43 are pure substances formed by the chemical combination of two or more elements in a fixed mass ratio.
- 44 Nitric acid consists of three atoms, one hydrogen atom and one atom.
- 45 Methane is from molecules, while nitric acid is an molecule.
- 46 Iron and cork can be distinguished by the difference in
- 47 Helium is used to fill while nitrogen gas is used to fill
- 48 Carbon is considered from atomic molecules, while from polyatomic molecules
- 49 Red mercury oxide can be decomposed into and by heating.

Q6. What is meant by:

1 Matter

.....

2 Atom

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3 Atomic number

.....

4 Atomic mass

.....

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5 Isotopes

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6 Fertilizers

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7 Mendeleev's periodic table

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8 Moseley's periodic table

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9 Modern periodic table

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10 Metals

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11 Non-metals

.....

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12 Valency

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13 Picometer

.....

14 Boiling point

.....

.....

15 Melting point

.....

.....

16 Pure substances

.....

.....

17 Element

.....

.....

18 Compound

.....

.....

19 Mixtures

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.....

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20 Homogeneous mixture (Solution)

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21 Heterogeneous mixture

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22 Molecular formula

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23 Physical properties

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24 Chemical properties

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Q7. Give one example of:

- 1 A molecule of an organic compound. (.....)
- 2 A molecule of an element consisting of a single atom. (.....)
- 3 A physical property to differentiate between materials.(.....)
- 4 A chemical property to differentiate between substances.
(.....)
- 5 An alloy made of iron added to some elements and it resists rusting.
(.....)
- 6 An alloy used in aircraft manufacturing. (.....)
- 7 An element used in the manufacture of electronic chips. (.....)
- 8 A low-density transparent material with 99.8% air content.
(.....)
- 9 A compound used in coloring house facades, papyrus, and statues.
(.....)
- 10 It regulates the calcium and phosphorus levels in the blood.
(.....)

Q8. Mention the roles of the following scientists:

1 Dalton

.....

2 Rutherford

.....

Q9. Write the chemical symbols for the following elements:

- 1 Carbon (.....) 2 Sodium (.....) 3 Chlorine (.....)
 4 Zinc (.....) 5 Potassium (.....) 6 Silicon (.....)
 7 Gold (.....) 8 Silver (.....) 9 Copper (.....)
 10 Phosphorus (.....) 11 Lead (.....) 12 Mercury (.....)
 13 Chromium (.....)

Q10. Calculate the atomic number of:

- 1 An element at the end of the third period. (.....)
 2 An alkali element in the fourth period. (.....)
 3 An inert gas element in the first period. (.....)
 4 An alkaline Earth element in the third period. (.....)
 5 An element whose last energy level M has the same number of electrons as the energy level K. (.....)
 6 An element in the second period and group 5A. (.....)
 7 A divalent metal in the second period. (.....)
 8 A divalent non-metal in the second period. (.....)
 9 An element in the start of the second period. (.....)

Q11. Compare between:

- 1 Protons, neutrons and electrons according to:

a. Type of charge **b.** Location **c.** Mass

Points of Comparison	Protons	Neutrons	Electrons
a. Type of Charge			
b. Location			
c. Mass			

2 $^{32}_{16}\text{S}$ and $^{40}_{20}\text{Ca}$ elements according to:

- a. Name b. Atomic number c. Atomic mass
- d. Number of protons e. Number of neutrons
- f. Number of electrons
- g. Number of energy levels occupied by electrons

Points of Comparison	$^{32}_{16}\text{S}$	$^{40}_{20}\text{Ca}$
a. Name		
b. Atomic Number		
c. Atomic Mass		
d. Number of Protons		
e. Number of Neutrons		
f. Number of Electrons		
g. Number of Energy Levels Occupied by Electrons		

3 The three isotopes of hydrogen according to:

- Name of the isotope
- Symbol
- Atomic mass
- Number of neutrons

Points of Comparison	The Three Isotopes of Hydrogen		
a. Name of the Isotope			
b. Symbol			
c. Atomic Mass			
d. Number of Neutrons			

- 4 Mendeleev's periodic table and Moseley's periodic table according to: The scientific basis of classifying elements.

Point of Comparison	Mendeleev's Periodic Table	Moseley's Periodic Table
The scientific basis of classifying elements		

- 5 Group 1A and Group 7A according to:

a. Group name

b. Its block

Points of Comparison	Group 1A	Group 7A
a. Group Name		
b. Its Block		

- 6 Group 2A and Group 0 according to:

a. Group name

b. Its block

Points of Comparison	Group 2A	Group 0
a. Group Name		
b. Its Block		

Q12. Mention the difference between each of the following:

- 1 A mixture of sand with iron filings and a mixture of sugar in water, in terms of separation methods.

Point of Comparison	A mixture of sand with iron filings	A mixture of sugar in water
Separation Method		

- 2 Oxygen molecule and water molecule, in terms of the type of molecules:

Point of Comparison	Oxygen Molecule	Water Molecule
Type of Molecules		

- 3 O_3 molecule and C molecule, in terms of:

a. Name

b. Number of atoms that make up the molecule.

Points of Comparison	O_3	C
a. Name		
b. Number of atoms that make up the molecule		

- 4 Water and honey, in terms of viscosity

Point of Comparison	Water	Honey
Viscosity		

- 5 Cork and iron, in terms of density.

Point of Comparison	Cork	Iron
Density		

- 6 Toothpaste and lemon, in terms of their effect on litmus paper.

Point of Comparison	Toothpaste	Lemon
Effect on Litmus Paper		

- 7 Butter mold and aerogel plate, in terms of their melting point.

Point of Comparison	Butter Mold	Aerogel Plate
Melting Point		

Q13. Mention the scientific reason:

- 1 The nucleus of the atom is positively charged.

.....

.....

- 2 The atom is electrically neutral.

.....

.....

- 3 The mass of the atom is concentrated in its nucleus.

.....

.....

- 4 The symbol of sodium is **Na** not **S** as it is expected.

.....

.....

- 5 It is advised to reduce the use of lots of fertilizers.

.....

.....

- 6 The atomic mass is often greater than the atomic number.

.....

.....

- 7 The atomic mass equals the atomic number in the hydrogen atom.

.....

.....

- 8 The atomic mass is double the atomic number in the $^{16}_8\text{O}$ atom.

.....

.....

- 9 Energy level (L) is saturated with 8 electrons.
-
-
- 10 Level (M) is saturated with electrons first before level (N).
-
-
- 11 Energy is different in the energy levels in which electrons are revolving.
-
-
- 12 The element isotopes have the same atomic number and different atomic masses.
-
-
- 13 Scientists had made many attempts for classifying elements.
-
-
- 14 Moseley rearranged elements in his table according to their atomic numbers.
-
-
- 15 Calcium ($_{20}\text{Ca}$) is a metal.
-
-
-
- 16 Chlorine ($_{17}\text{Cl}$) is a non-metal.
-
-

17 Sodium ($_{11}\text{Na}$) is an element from alkali metals.

.....

.....

18 Calcium ($_{20}\text{Ca}$) is an element from alkaline Earth metals.

.....

.....

19 Fluorine ($_{9}\text{F}$) is an element from halogens.

.....

.....

20 It is difficult to identify metalloids from their outermost energy level.

.....

.....

21 The valency of noble gases is zero.

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.....

22 The hydrogen molecule is considered an element molecule, while the sodium chloride molecule is a compound molecule.

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23 Seawater is considered a homogeneous mixture.

.....

.....

24 Wood floats on the surface of water, while iron sinks in it.

.....

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25 Iron filings can be easily separated from flour.

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.....

26 The nitric acid molecule is considered an inorganic compound molecule.

.....

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27 Helium gas is used to fill balloons.

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28 Nitrogen is used to fill car tires instead of air.

.....

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29 Stainless steel alloy is used in the manufacture of cookware.

.....

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30 Aircraft structures are made of aluminum and titanium alloy.

.....

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31 Aerogel is used in making jackets for research scientists in Antarctica.

.....

.....

32 Vitamin D is considered one of the important vitamins for the human body.

.....

.....

Q14. What happens:

1 To the atomic radius when increasing the atomic number of elements of the same group from top to bottom?

.....

.....

- 2 To the atomic radius when increasing the atomic number of elements in one period from left to right?
.....
- 3 If the number of electrons in the last energy level is less than 4 electrons? (According to the type of element)
.....
- 4 If the number of electrons in the last energy level is greater than 4 electrons? (According to the type of element)
.....
- 5 If the number of electrons in the last energy level is complete with electrons? (According to the type of element)
.....
- 6 If the atomic radius increases?
(According to the boiling and melting points of alkali metals)
.....
- 7 If the atomic radius increases?
(According to the boiling and melting points of halogens)
.....
- 8 To the acidified water if it is subjected to electrolysis?
.....
- 9 If you heat red mercury oxide compound?
.....
- 10 If we dip a sunflower leaf in lemon juice?
.....
- 11 If we put a piece of wood in water?
.....
- 12 If we manufacture iron cookware?
.....
- 13 If we use carbon dioxide gas to fill balloons?
.....

Q15. Answer the following question:

- 1 What are the building units for calcium carbonate material?
.....
.....
- 2 What are the most important attempts to classify elements?
.....
.....
.....
- 3 What is the scientific basis for classifying elements in Mendeleev's periodic table?
.....
.....
- 4 What is the scientific basis for classifying elements in Moseley's periodic table?
.....
.....
- 5 What is the scientific basis for classifying elements in the Modern periodic table?
.....
.....
- 6 An element's atomic number is 11 and its atomic mass is 23.
Find:
 - a. The number of electrons
 - b. The number of protons
 - c. The number of neutrons.....
.....
.....
.....

- 7 An element has 13 protons and the number of its neutrons is more than the number of its protons by one Find:

- The number of electrons
- The number of nucleons
- The electronic configuration
- The number of electrons in the outermost energy level

.....

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.....

.....

- 8 An element H, its electrons are distributed in two energy levels, and the outermost energy level contains 4 electrons, and there are 6 neutrons in its nucleus.

- Show by drawing the electronic configuration for this element.
- Find its atomic mass.
- Write the symbol of this element indicating the number of both A and z.

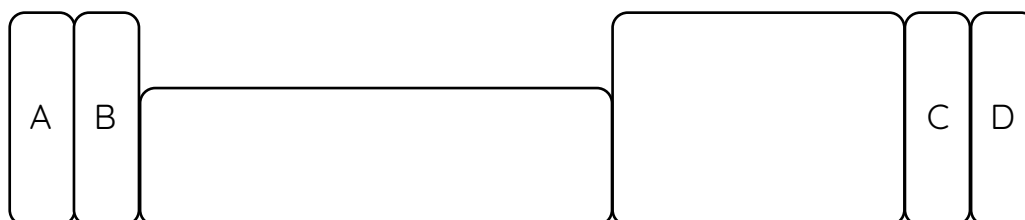
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- 9 The following figure shows some groups of the periodic table



From the previous table, complete the following sentences:

- The elements of group (A) are known by elements, while the elements of group (D) is known by
- The valency of elements in group (B) is, While the valency of elements in group (C) is

10 The following figure represents third period:

A	B	C	D	E	F	G	H
---	---	---	---	---	---	---	---

Find:

a. The atomic number of the element H that is considered an inert gas.

.....

.....

b. Which of the following elements is considered an alkali (A-B-D-G)?

.....

c. Which of the following elements is considered an alkali earth (A-B-D-G)?

.....

d. Which of the following elements is considered a halogen (A-B-D-G)?

.....

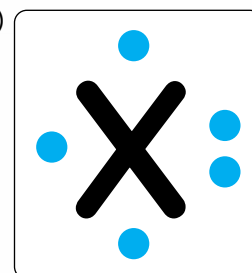
11 From the opposite Lewis dot structure of element (X) located in period 3, find:

a. The atomic number for element.

.....

.....

.....



b. Valency for element.

.....

c. Type of element.

.....

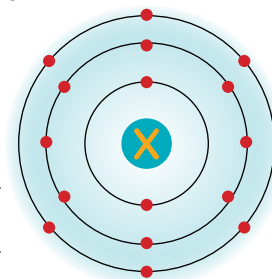
d. The atomic number that precedes it in the same period.

.....

e. The atomic number that precedes it in the same group.

.....

- 12 The following figure shows the electronic configuration of element (X). Determine:



- a. The atomic number

.....

.....

- b. Place of element in the periodic table

.....

.....

- c. Type of element

.....

.....

- d. Valency of element

.....

.....

.....

- 13 The following table represents the elements of the second period:

Group number	1A	2A	3A	4A	5A	6A	7A	0
Lewis Formula	• Li	• Be •	• B •	• C •	: N •	: O :	: F :	: Ne :

Determine:

- a. The valence of the element boron. (.....)
- b. The type of element lithium. (.....)
- c. A metal element with a valence of divalent. (.....)
- d. A metalloid element. (.....)
- e. A halogen element. (.....)
- f. A non-metal element with a valence of divalent. (.....)
- g. An inert element. (.....)

October Revision

Q1. Choose the correct answer:

- 1 Sphinx statue consists of rocks made up of
a. sand stone b. limestone c. granite d. basalt
- 2 The model of is the first model for the atom on an experimental base.
a. Dalton b. Mendeleev c. Moseley d. Rutherford
- 3 The atom consists of positively charged
a. electrons b. neutrons c. nucleus d. levels
- 4 Negatively charged particles that revolve around the nucleus are
a. protons b. electrons c. neutrons d. particles
- 5 The mass of subatomic components is measured in atomic mass units, and its symbol is
a. U b. Y c. W d. H
- 6 The chemical symbol of potassium is
a. B b. P c. K d. Po
- 7 The chemical symbol of lead element is
a. Bp b. Pb c. Le d. Bb
- 8 NPK fertilizer consists of element that helps to make the plant leaves green.
a. K b. N c. P d. F
- 9 element is necessary for strengthen roots of plants.
a. K b. N c. P d. F
- 10 The number of positive protons represents the
a. atomic number
b. mass number
c. number of energy levels
d. number of elements

- 11 Inside the nucleus of the atom, mostly the number of is more than or equal the number of protons.
a. atomic number b. electrons c. neutrons d. particles
- 12 An element contains 20 nucleons and the number of negative charges is 9 so the number of neutral charges is
a. 12 b. 10 c. 11 d. 9
- 13 An atom of an element in which electrons revolves around it at three energy levels, and the outermost energy level contains 2 electrons, so its atomic number is
a. 2 b. 12 c. 14 d. 8
- 14 An element's outermost energy level (L) contains a number of electrons equal to the number of electrons in the level (K), so its atomic number is
a. 4 b. 6 c. 8 d. 12
- 15 An element's outermost in which energy level (M) contains one electron, so its atomic number is
a. 3 b. 9 c. 11 d. 19
- 16 Deuterium is considered one of the isotopes of element.
a. oxygen b. nitrogen c. hydrogen d. carbon
- 17 is considered one of homogeneous mixtures.
a. A mixture of iron filings and sawdust
b. Salt solution
c. A mixture of oil with water
d. A mixture of sand and water
- 18 From molecules that consists of the same type of atoms is molecule.
a. HCl b. H_2O c. O_2 d. NH_3
- 19 can be decomposed through electrolysis by using Hoffman's voltammeter.
a. Water b. Mercuric oxide c. Carbon d. Nitric acid

- 20 We can distinguish between through thermal conductivity.

a. iron and copper b. rubber and plastic

c. copper and rubber d. silver and iron
- 21 Salt solution can be separated through

a. filtration process b. magnetic attraction

c. evaporation and condensation d. precipitation process
- 22 is from polyatomic element molecules.

a. Carbon b. Oxygen c. Ozone d. Iron
- 23 is from substances that can be separated by chemical methods.

a. Red mercuric oxide b. Table salt solution

c. A mixture Iron filings and sand d. A mixture of oil and water
- 24 The molecular formula for a compound that consists of one nitrogen atom, one hydrogen atom, and three oxygen atoms is

a. HO₃N b. HNO₃ c. O₃HN d. NHO₃
- 25 The toothpaste is colored with color on adding a litmus paper on it.

a. blue b. red c. violet d. green
- 26 Balloons can be filled with gas.

a. oxygen b. nitrogen c. chlorine d. helium
- 27 is considered from the compounds.

a. Ozone b. Iron

c. Mercury d. Egyptian indigo dye
- 28 The number of atoms in sulphuric acid molecule H₂SO₄

a. 5 b. 8 c. 7 d. 6
- 29 The molecules of the following organic compounds consists of thousands of atoms except

a. hemoglobin b. plastic polymer

c. methane d. vitamin D

Q2. Put (✓) or (X):

- 1 The atom is the building unit of the matter. (✓)
- 2 Electrons are found inside the nucleus. (X)
- 3 There are four main energy levels around the nucleus. (X)
- 4 The charge and magnitude of protons are larger than electrons. (X)
- 5 The chemical symbol of sodium element is S. (X)
- 6 The atomic mass is larger than the atomic number for all elements. (X)
- 7 The third energy level is saturated with 18 electrons. (✓)
- 8 The energy level K is the largest level in energy. (X)
- 9 The electronic configuration for an element that contains 15 neutrons and 14 protons has three energy levels. (✓)
- 10 The outermost energy level of magnesium contains 2 electrons. (✓)

Q3. Correct the underlined words:

- 1 Methane is considered one of inorganic compounds. (Water or Mercury oxide)
- 2 Oxygen is considered from mixtures. (Salt solution)
- 3 Table salt solution can be separated by filtration. (Mixture of sand and water)
- 4 Helium gas is used in filling car tires. (Nitrogen)
- 5 Density and melting points from the chemical properties of the matter. (Physical properties)
- 6 Heterogeneous mixtures can't be separated by physical means. (Homogeneous mixtures)
- 7 From organic compounds is NaHCO₃. (CH₄)

Q4. Write the scientific term:

- 1 It is everything that has a mass and occupies a space. (Matter)
- 2 The building unit of the matter. (Atom)
- 3 Tiny particles can't be subdivided. (Atoms)
- 4 The scientist who made the first scientific theory about the atom. (Dalton)
- 5 The space that contains protons and neutrons. (Nucleus)
- 6 Paths in which electrons revolve around the nucleus. (Energy levels)
- 7 Particles that include protons, neutrons and electrons. (Subatomic particles)
- 8 Positively charged particles located inside the nucleus. (Protons)
- 9 Particles whose mass can be neglected while their charge can't. (Electrons)
- 10 Particles whose charge can be neglected while their mass can't. (Neutrons)
- 11 Chemical compounds used in improving the agricultural productivity. (Fertilizers)
- 12 A type of fertilizer contains nitrogen, phosphorus and potassium. (NPK Fertilizers)
- 13 An element necessary for greening of plant leaves. (Nitrogen)
- 14 An element necessary for strengthening roots. (Phosphorus)
- 15 An element necessary for healthy plant growth. (Potassium)
- 16 Number of protons found inside the nucleus of the atom. (Atomic number)
- 17 The summation of numbers of both protons and neutrons. (Mass number)
- 18 The difference between atomic mass and atomic number. (The number of neutrons)

- 19 Different forms of elements have the same atomic number and different atomic masses. (Isotopes)
- 20 The simplest pure form of matter where its components cannot be separated by physical or chemical methods. (Element)
- 21 Materials composed of two or more substances that are not chemically combined. (Mixtures)
- 22 Mixtures whose components can be distinguished with the naked eye. (Homogeneous Mixtures)
- 23 A pure substance is formed as a result of the chemical combination of two or more elements in a fixed mass ratio, and its components can be separated by various methods. (Compounds)
- 24 A semi-metal used in the manufacture of electronic chips. (Silicon)
- 25 An alloy that maintains its strength at high temperatures and is used in the manufacture of military aircraft structures. (Aluminum-Titanium alloy)
- 26 A symbolic formula that expresses the type and number of atoms of the elements that make up the molecule. (Molecular formula)
- 27 Properties that can be observed and some of them can be measured. (Physical Properties)
- 28 The properties that only appear when a chemical reaction occurs that leads to a change in the shape and composition of the substance. (Chemical Properties)

Q5. Complete the following sentences:

- 1 The electrons revolve around the nucleus with a very high speed.
- 2 The chemical symbol of potassium is K.
- 3 The chemical symbol for the silver element is Ag.
- 4 NPK fertilizer consists of phosphorus which is necessary to strengthen the roots.

- 5 **Fertilizers** are chemical compounds used in improving agricultural production.
- 6 An element's atomic number is 8 so its electronic configuration is **2, 6**.
- 7 The outermost energy level for any atom doesn't contain more than **8** electrons
- 8 The second energy level is **L**.
- 9 The number of main energy levels is **seven**.
- 10 The number of electrons necessary to saturate the first four energy levels can be determined by the mathematical relation **$2n^2$** .
- 11 An element's nucleus contains 27 nucleons and the number of neutrons is 14 so the number of electrons is **13**
- 12 **Isotopes** are different forms for one element having the same atomic number and different in **mass** number.
- 13 Each period ends with the elements of group **(0)** and this group is preceded by group **7A**.
- 14 The second period starts with elements of group **1A** and ends with elements of group **(0)**.
- 15 The modern periodic table consists of **7** periods and **18** groups.
- 16 The modern periodic table consists of **4** blocks.
- 17 Elements of block-s are located on the **left side** of the periodic table and consist of **two** groups while elements of **block-f** are located at the bottom of the periodic table.
- 18 The Nobel gases are located in the **p** block and contain **one** group(s).
- 19 The elements of **d** block are located in the middle of the periodic table and it contains **10** Group(s).

- 20 The boiling point of bromine is higher than the boiling point of chlorine.
- 21 The elements of the same groups have the same valency and properties.
- 22 The scientific basis in which Mendeleev's periodic table is made was arranging elements according to their atomic masses.
- 23 The scientific basis in which Moseley's periodic table is made was arranging elements according to their atomic numbers.
- 24 The scientific basis in which the modern periodic table is made was arranging elements according to their atomic numbers and the way of filling energy sublevels with electrons.
- 25 The scientist Moseley discovered that the properties of the elements are related to their atomic numbers not to atomic masses as Mendeleev believes.
- 26 The block-p starts with group 3A and ends with group (0).
- 27 The elements of halogens and Nobel gases are located in block P.
- 28 All elements of s block are metals except Hydrogen that is considered a non-metal gas.
- 29 The number of elements in the first period is 2 while the number of elements in in the fourth period is 18.
- 30 Transition elements start to appear from period number four and their block consists of ten groups.
- 31 The chemical activity of alkali metals increases as we move from up to down while the chemical activity of halogens decreases as we move from up to down.
- 32 The atomic radius is measured by a unit called picometer.
- 33 The atomic radius is inversely proportional with the atomic number of the element in the same period.

- 34 Silicon and germanium are considered as metalloids.
- 35 Elements are substances that cannot be separated into their components by chemical or physical methods.
- 36 Water can be separated into its components using a device called Hofmann's voltameter.
- 37 Water is decomposed by electrolysis into two elements Oxygen gas and hydrogen gas.
- 38 Mixtures are classified into homogenous mixtures and heterogeneous mixtures.
- 39 Heterogeneous mixtures cannot be distinguished by the naked eye.
- 40 All matters are composed of small, similar units called atoms.
- 41 Molecules of elements consist of atoms of the same type, while molecules of compounds consist of atoms for different elements
- 42 The number of atoms in a single molecule in some organic compounds may reach several thousand, as in hemoglobin and Vitamin-D.
- 43 Compounds are pure substances formed by the chemical combination of two or more elements in a fixed mass ratio.
- 44 Nitric acid consists of three oxygen atoms, one hydrogen atom and one nitrogen atom.
- 45 Methane is from organic compound molecules, while nitric acid is an inorganic compound molecule.
- 46 Iron and cork can be distinguished by the difference in density.
- 47 Helium is used to fill ballons while nitrogen gas is used to fill car tires.
- 48 Carbon is considered from mono atomic molecules, while ozone from polyatomic molecules
- 49 Red mercury oxide can be decomposed into mercury and oxygen gas by heating.

Q6. What is meant by:

1 Matter

It is anything that has mass and volume (occupies space).

2 Atom

It is the smallest building unit of any matter.

3 Atomic number

It is the number of protons inside the nucleus of the atom.

4 Atomic mass

It is the sum of the number of protons and neutrons inside the nucleus of the atom.

5 Isotopes

They are different forms of the same element that have the same atomic number but differ in mass number.

6 Fertilizers

They are chemical compounds that are used to improve the agricultural production.

7 Mendeleev's periodic table

It is the first real periodic table for classifying elements, in which the scientist Mendeleev arranged elements in an ascending order according to their atomic masses.

8 Moseley's periodic table

It is the periodic table that was made by scientist Moseley, in which elements were arranged in an ascending order according to their atomic numbers.

9 Modern periodic table

It is the periodic table that was made by a group of scientists, in which elements were arranged in an ascending order according to their atomic numbers and the way of filling energy sublevels with electrons.

10 Metals

They are elements whose outermost energy levels contain 1, 2, or 3 electrons.

11 Non-metals

They are elements whose outermost energy levels contain 5, 6, or 7 electrons.

12 Valency

It is the number of unpaired electrons found in the outermost (last) energy level in Lewis structure.

13 Picometer

It is the unit of measuring atomic radius.

14 Boiling point

It is the temperature at which matter changes from a liquid state to a gaseous state.

15 Melting point

It is the temperature at which matter changes from a solid state to a liquid state.

16 Pure substances

They are substances whose components can't be separated by physical methods.

17 Element

It is the simplest pure form of matter that can't be broken down into simpler forms.

18 Compound

It is a pure substance formed from the chemical combination of two or more elements in fixed mass ratios.

19 Mixtures

They are substances composed of two or more substances that are not chemically combined, allowing them to be separated by physical methods.

20 Homogeneous mixture (Solution)

It is a mixture in which its components can't be distinguished by the naked eye.

21 Heterogeneous mixture

It is a mixture in which its components can be distinguished by the naked eye.

22 Molecular formula

It is a symbolic formula that expresses the type and the number of atoms that form the molecule.

23 Physical properties

They are properties of substances that can be observed and measured in some cases.

24 Chemical properties

They are properties of substances that only appear when a chemical reaction occurs, resulting in a change in both the shape and composition of the substance.

Q7. Give one example of:

- 1 A molecule of an organic compound. (Methane molecule)
- 2 A molecule of an element consisting of a single atom. (Carbon molecule)
- 3 A physical property to differentiate between materials. (Density)
- 4 A chemical property to differentiate between substances. (Litmus paper)
- 5 An alloy made of iron added to some elements and it resists rusting. (Stainless steel alloy)
- 6 An alloy used in aircraft manufacturing. (Aluminum-titanium alloy)
- 7 An element used in the manufacture of electronic chips. (Silicon)
- 8 A low-density transparent material with 99.8% air content. (Aerogel)
- 9 A compound used in coloring house facades, papyrus, and statues. (Egyptian Indigo Dye)
- 10 It regulates the calcium and phosphorus levels in the blood. (Vitamin D)

Q8. Mention the roles of the following scientists:

- 1 Dalton
He made the first scientific theory about the atom.
- 2 Rutherford
He made the first model for the atom on an experimental base.

Q9. Write the chemical symbols for the following elements:

- | | | |
|-------------------|-----------------|-----------------|
| 1 Carbon (C) | 2 Sodium (Na) | 3 Chlorine (Cl) |
| 4 Zinc (Zn) | 5 Potassium (K) | 6 Silicon (Si) |
| 7 Gold (Au) | 8 Silver (Ag) | 9 Copper (Cu) |
| 10 Phosphorus (P) | 11 Lead (Pb) | 12 Mercury (Hg) |
| 13 Chromium (Cr) | | |

Q10. Calculate the atomic number of:

- 1 An element at the end of the third period. (18)
- 2 An alkali element in the fourth period. (19)
- 3 An inert gas element in the first period. (2)
- 4 An alkaline Earth element in the third period. (12)
- 5 An element whose last energy level M has the same number of electrons as the energy level K. (12)
- 6 An element in the second period and group 5A. (7)
- 7 A divalent metal in the second period. (4)
- 8 A divalent non-metal in the second period. (8)
- 9 An element in the start of the second period. (3)

Q11. Compare between:

- 1 Protons, neutrons and electrons according to:

a. Type of charge b. Location c. Mass

Points of Comparison	Protons	Neutrons	Electrons
a. Type of Charge	Positive	Neutral	Negative
b. Location	In the nucleus	In the nucleus	Revolve around the nucleus
c. Mass	1 u	1 u	$\frac{1}{1836}$ u

2 $^{32}_{16}\text{S}$ and $^{40}_{20}\text{Ca}$ elements according to:

- a. Name b. Atomic number c. Atomic mass
 d. Number of protons e. Number of neutrons
 f. Number of electrons
 g. Number of energy levels occupied by electrons

Points of Comparison	$^{32}_{16}\text{S}$	$^{40}_{20}\text{Ca}$
a. Name	Sulphur	Calcium
b. Atomic Number	16	20
c. Atomic Mass	32	40
d. Number of Protons	16	20
e. Number of Neutrons	16	20
f. Number of Electrons	16	20
g. Number of Energy Levels Occupied by Electrons	3	4

3 The three isotopes of hydrogen according to:

- a. Name of the isotope b. Symbol
 c. Atomic mass d. Number of neutrons

Points of Comparison	The Three Isotopes of Hydrogen		
a. Name of the Isotope	Protium	Deuterium	Tritium
b. Symbol	^1_1H	^2_1H	^3_1H
c. Atomic Mass	1	2	3
d. Number of Neutrons	0	1	2

- 4 Mendeleev's periodic table and Moseley's periodic table according to: The scientific basis of classifying elements.

Point of Comparison	Mendeleev's Periodic Table	Moseley's Periodic Table
The scientific basis of classifying elements	Elements are arranged in an ascending order according to their <u>atomic masses</u> .	Elements are arranged in an ascending order according to their <u>atomic numbers</u> .

- 5 Group 1A and Group 7A according to:

a. Group name

b. Its block

Points of Comparison	Group 1A	Group 7A
a. Group Name	Alkali metals	Halogens
b. Its Block	s-block	p-block

- 6 Group 2A and Group 0 according to:

a. Group name

b. Its block

Points of Comparison	Group 2A	Group 0
a. Group Name	Alkaline Earth metals	Nobel gases
b. Its Block	s-block	p-block

Q12. Mention the difference between each of the following:

- 1 A mixture of sand with iron filings and a mixture of sugar in water, in terms of separation methods.

Point of Comparison	A mixture of sand with iron filings	A mixture of sugar in water
Separation Method	Magnetic separation	Filtration

- 2 Oxygen molecule and water molecule, in terms of the type of molecules:

Point of Comparison	Oxygen Molecule	Water Molecule
Type of Molecules	Element molecule	Compound molecule

- 3 O_3 molecule and C molecule, in terms of:

a. Name b. Number of atoms that make up the molecule.

Points of Comparison	O_3	C
a. Name	Ozone molecule	Carbon molecule
b. Number of atoms that make up the molecule	Three atoms	One atom

- 4 Water and honey, in terms of viscosity

Point of Comparison	Water	Honey
Viscosity	Low	High

- 5 Cork and iron, in terms of density.

Point of Comparison	Cork	Iron
Density	Its density is lower than water, so it floats on water.	Its density is higher than water, so it sinks in water.

- 6 Toothpaste and lemon, in terms of their effect on litmus paper.

Point of Comparison	Toothpaste	Lemon
Effect on Litmus Paper	It turns litmus paper into blue.	It turns litmus paper into red.

- 7 Butter mold and aerogel plate, in terms of their melting point.

Point of Comparison	Butter Mold	Aerogel Plate
Melting Point	Low	High

Q13. Mention the scientific reason:

- 1 The nucleus of the atom is positively charged.

Because the nucleus contains positively charged protons and neutrally charged neutrons.

- 2 The atom is electrically neutral.

Because the number of positive protons inside its nucleus is equal to the number of negative electrons that revolve around the nucleus.

- 3 The mass of the atom is concentrated in its nucleus.

Because electrons have negligible mass compared to the mass of protons and neutrons inside the nucleus.

- 4 The symbol of sodium is **Na** not **S** as it is expected.

Because the symbol of sodium (**Na**) is derived from its Latin name (Natrium).

- 5 It is advised to reduce the use of lots of fertilizers.

Because the overuse of chemical fertilizers may harm humans, animals, and plants because it causes water and soil pollution.

- 6 The atomic mass is often greater than the atomic number.

Because the mass number equals the sum of protons and neutrons inside the atom, but the atomic number equals the number of protons only.

- 7 The atomic mass equals the atomic number in the hydrogen atom.

Because the nucleus of the hydrogen atom has no neutrons.

- 8 The atomic mass is double the atomic number in the $^{16}_8\text{O}$ atom.

Because the number of protons equals the number of neutrons in the oxygen atom.

- 9 Energy level (L) is saturated with 8 electrons.
– Because the number of electrons in the first four energy levels can be calculated by the mathematical relation: $2n^2$.
Number of electrons in energy level (L) = $2n^2 = 2 \times (2)^2 = 8$ electrons
- 10 Level (M) is saturated with electrons first before level (N).
Because energy level (M) has energy lower than that of energy level (N).
- 11 Energy is different in the energy levels in which electrons are revolving.
Because the energy of the energy level increases as we move away from the nucleus.
- 12 The element isotopes have the same atomic number and different atomic masses.
Because the element isotopes have the same number of protons, but they are different in the number of neutrons.
- 13 Scientists had made many attempts for classifying elements.
To facilitate their study and to find a relationship between the elements and their chemical and physical properties.
- 14 Moseley rearranged elements in his table according to their atomic numbers.
Because Moseley discovered that the periodic properties of elements are related to their atomic numbers, not to their atomic masses, as Mendeleev believed.
- 15 Calcium ($_{20}\text{Ca}$) is a metal.
Because calcium ($_{20}\text{Ca}$) has less than 4 electrons in its last (outermost) energy level.
Electronic configuration of ($_{20}\text{Ca}$) is (2 , 8 , 8 , 2).
- 16 Chlorine ($_{17}\text{Cl}$) is a non-metal.
Because chlorine ($_{17}\text{Cl}$) has more than 4 electrons in its last (outermost) energy level.
Electronic configuration of ($_{17}\text{Cl}$) is (2 , 8 , 7).

- 17 Sodium ($_{11}\text{Na}$) is an element from alkali metals.

Because the last energy level of sodium contains one electron, which means it is located in group 1A, which is called the alkali metals group.

Electronic configuration of ($_{11}\text{Na}$) is (2 , 8 , ①).

- 18 Calcium ($_{20}\text{Ca}$) is an element from alkaline Earth metals.

Because the last energy level of calcium contains two electrons, which means it is located in group 2A, which is called the alkaline Earth metals group.

Electronic configuration of ($_{20}\text{Ca}$) is (2 , 8 , 8 , ②).

- 19 Fluorine ($_{9}\text{F}$) is an element from halogens.

Because the last energy level of fluorine contains seven electrons, which means it is located in group 7A, which is called the halogens group.

Electronic configuration of ($_{9}\text{F}$) is (2 , ⑦).

- 20 It is difficult to identify metalloids from their outermost energy level.

Because the number of electrons in their outermost energy levels is different.

- 21 The valency of noble gases is zero.

Because they have complete outermost energy levels, so they don't have individual electrons in Lewis structure.

- 22 The hydrogen molecule is considered an element molecule, while the sodium chloride molecule is a compound molecule.

Because hydrogen molecule (H_2) is composed of same atoms, while sodium chloride molecule (NaCl) is composed of different atoms.

- 23 Seawater is considered a homogeneous mixture.

Because the components of seawater can't be distinguished by the naked eye.

- 24 Wood floats on the surface of water, while iron sinks in it.

- Because the density of wood is lower than that of water, so it floats on water.
- Because the density of iron is higher than that of water, so it sinks in water.

- 25 Iron filings can be easily separated from flour.

Because they don't combine chemically together, so we can separate them easily by magnetic separation.

- 26 The nitric acid molecule is considered an inorganic compound molecule.

Because the nitric acid molecule (HNO_3) doesn't contain carbon or hydrogen atoms.

- 27 Helium gas is used to fill balloons.

Because helium gas is lighter than air and it is not flammable.

- 28 Nitrogen is used to fill car tires instead of air.

Because nitrogen is not affected by temperature and doesn't react with rubber.

- 29 Stainless steel alloy is used in the manufacture of cookware.

Because stainless steel alloy resists rusting.

- 30 Aircraft structures are made of aluminum and titanium alloy.

Because aluminum-titanium alloy is lighter than aluminum and retains strength at high temperatures.

- 31 Aerogel is used in making jackets for research scientists in Antarctica.

Because Aerogel has excellent insulating properties, so it is used instead of using polar bear fur, helping to protect them from extinction.

- 32 Vitamin D is considered one of the important vitamins for the human body.

Because Vitamin D regulates calcium and phosphorus levels in the blood to prevent osteoporosis.

Q14. What happens:

- 1 To the atomic radius when increasing the atomic number of elements of the same group from top to bottom?

The atomic radius of elements will increase.

- 2 To the atomic radius when increasing the atomic number of elements in one period from left to right?
The atomic radius of elements will decrease.
- 3 If the number of electrons in the last energy level is less than 4 electrons? (According to the type of element)
The type of element will be a metal.
- 4 If the number of electrons in the last energy level is greater than 4 electrons? (According to the type of element)
The type of element will be a non-metal.
- 5 If the number of electrons in the last energy level is complete with electrons? (According to the type of element)
The type of element will be a noble (inert) gas.
- 6 If the atomic radius increases?
(According to the boiling and melting points of alkali metals)
The melting and boiling points will decrease.
- 7 If the atomic radius increases?
(According to the boiling and melting points of halogens)
The melting and boiling points will increase.
- 8 To the acidified water if it is subjected to electrolysis?
Water will decompose into its components, which are hydrogen gas and oxygen gas.
- 9 If you heat red mercury oxide compound?
Red mercury oxide will decompose into its components, which are mercury (Hg) and oxygen gas (O₂).
- 10 If we dip a sunflower leaf in lemon juice?
Its color will turn into red.
- 11 If we put a piece of wood in water?
The wood piece will float on water.
- 12 If we manufacture iron cookware?
The cookware may rust.
- 13 If we use carbon dioxide gas to fill balloons?
The balloons won't rise in the air.

Q15. Answer the following question:

- 1 What are the building units for calcium carbonate material?

Atoms.

- 2 What are the most important attempts to classify elements?

a. Mendeleev's Periodic Table.

b. Moseley's Periodic Table.

c. Modern Periodic Table.

- 3 What is the scientific basis for classifying elements in Mendeleev's periodic table?

Mendeleev arranged elements in an ascending order according to their atomic masses.

- 4 What is the scientific basis for classifying elements in Moseley's periodic table?

Moseley arranged elements in an ascending order according to their atomic number.

- 5 What is the scientific basis for classifying elements in the Modern periodic table?

Scientists arranged elements in an ascending order according to their atomic number and the way of filling the energy sublevels with electrons.

- 6 An element's atomic number is 11 and its atomic mass is 23.
Find:

a. The number of electrons

b. The number of protons

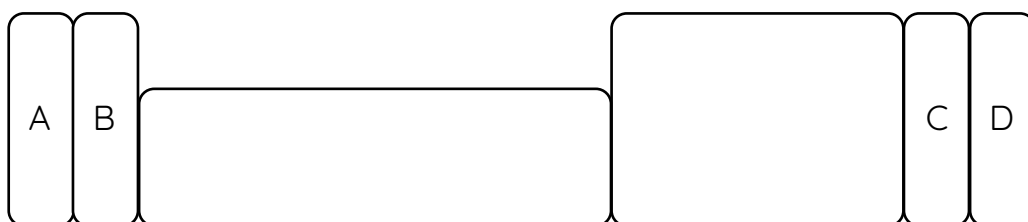
c. The number of neutrons

a. The number of electrons = the atomic number = 11.

b. The number of protons = the atomic number = 11.

**c. The number of neutrons = the mass number - the atomic number
= 23 - 11 = 12.**

- 7 An element has 13 protons and the number of its neutrons is more than the number of its protons by one Find:
- The number of electrons
 - The number of nucleons
 - The electronic configuration
 - The number of electrons in the outermost energy level
- a. The number of electrons = the number of protons = 13.
- b. The number of nucleons = $13 + 14 = 27$.
- c. The electronic configuration is (2 , 8 , 3).
- d. The number of electrons in the outermost energy level = 3 electrons.
- 8 An element H, its electrons are distributed in two energy levels, and the outermost energy level contains 4 electrons, and there are 6 neutrons in its nucleus.
- Show by drawing the electronic configuration for this element.
 - Find its atomic mass.
 - Write the symbol of this element indicating the number of both A and z.
- a. The electronic configuration is (2 , 4).
- b. The atomic mass = the number of electrons + the number of neutrons = $6 + 6 = 12$.
- c. $^{12}_6\text{C}$.
- 9 The following figure shows some groups of the periodic table



From the previous table, complete the following sentences:

- The elements of group (A) are known by alkali metals elements, while the elements of group (D) is known by nobel gases.
- The valency of elements in group (B) is divalent, While the valency of elements in group (C) is monovalent.

- 10 The following figure represents third period:

A	B	C	D	E	F	G	H
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Find:

- a. The atomic number of the element H that is considered an inert gas.

The electronic configuration of element (H) is (2 , 8 , 8).

The atomic number = the number of electrons = 2 + 8 + 8 = 18

- b. Which of the following elements is considered an alkali (A-B-D-G)?

A

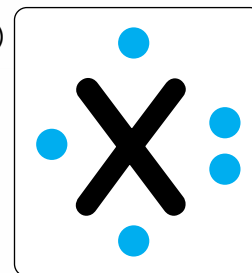
- c. Which of the following elements is considered an alkali earth (A-B-D-G)?

B

- d. Which of the following elements is considered a halogen (A-B-D-G)?

G

- 11 From the opposite Lewis dot structure of element (X) located in period 3, find:



- a. The atomic number for element.

The electronic configuration of element (X)

is (2 , 8 , 5).

The atomic number = the number of electrons = 2 + 8 + 5 = 15

- b. Valency for element.

Trivalent (because it has three unpaired electrons Lewis structure).

- c. Type of element.

Non-metal (because it has more than four electrons in its last energy level).

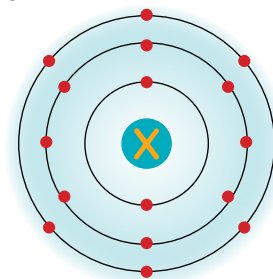
- d. The atomic number that precedes it in the same period.

(14)

- e. The atomic number that precedes it in the same group.

(7)

- 12 The following figure shows the electronic configuration of element (X). Determine:



- a. The atomic number

The atomic number = $2 + 8 + 6 = 16$

- b. Place of element in the periodic table

The electronic configuration of element (X) is (2 , 8 , 6).

So element (X) is located in Period 3 and group 6A

- c. Type of element

Non-metal (because it has more than four electrons in its last energy level).

- d. Valency of element

Lewis structure of element (X) is $\cdot \ddot{\text{X}} \cdot$

Element (X) is Divalent (because it has two unpaired electrons Lewis structure).

- 13 The following table represents the elements of the second period:

Group number	1A	2A	3A	4A	5A	6A	7A	0
Lewis Formula	$\cdot \text{Li}$	$\cdot \text{Be} \cdot$	$\cdot \overset{\cdot}{\underset{\cdot}{\text{B}}} \cdot$	$\cdot \overset{\cdot}{\underset{\cdot}{\text{C}}} \cdot$	$\cdot \overset{\cdot}{\underset{\cdot}{\text{N}}} \cdot$	$\cdot \overset{\cdot}{\underset{\cdot}{\text{O}}} \cdot$	$\cdot \overset{\cdot}{\underset{\cdot}{\text{F}}} \cdot$	$\cdot \overset{\cdot}{\underset{\cdot}{\text{Ne}}} \cdot$

Determine:

- | | |
|--|------------------|
| a. The valence of the element boron. | (3) |
| b. The type of element lithium. | (Alkali Metal) |
| c. A metal element with a valence of divalent. | (Beryllium - Be) |
| d. A metalloid element. | (Boron - B) |
| e. A halogen element. | (Fluorine - F) |
| f. A non-metal element with a valence of divalent. | (Oxygen - O) |
| g. An inert element. | (Neon - Ne) |

حمل الآن

مجاناً وحصرياً

المراجعة رقم (3)

اختبار شهر اكتوبر



1

Write scientific term for each of the following sentences:

Lesson1

1. Everything that has mass and volume or occupies space. (.....)
2. The building and structural unit of all matter. (.....)
3. The first scientific theory about atoms. (.....)
4. The first experimental model of the atom. (.....)
5. Positively charged particles found inside the nucleus of an atom (.....)
6. A subatomic particle whose charge can be neglected but whose mass cannot be neglected (.....)
7. Negatively charged particles with a very small mass that revolve around the nucleus in energy levels. (.....)
8. Chemical compounds used in improving agricultural production. (.....)
9. The total number of protons and neutrons that make up the nucleus of an atom.(.....)
10. Imaginary areas in which electrons revolve around the nucleus, each according to its energy. (.....)
11. Different forms of atoms of the same element have the same atomic number but differ in their mass numbers. (.....)

Lesson2

12. A scientist who arranged the elements in ascending order according to their atomic numbers (.....)
13. A scientist who arranged the elements in ascending order according to their atomic masses (.....)
14. A scientist who added the zero group to Mendeleev's table (.....)
15. A scientist who proposed an easy way to express the number of valence electrons around the atomic symbol. (.....)
16. An inert gas located in the first period. (.....)
17. A liquid metallic element. (.....)
18. A liquid non-metallic element. (.....)
19. The smallest alkali metals in terms of radius. (.....)
20. The largest metals in terms of radius (.....)
21. The most active elements of group 7 (.....)
22. The halogens with the lowest melting and boiling points (.....)

Lesson3

23. A substances consisting of two or more materials that are not chemical combined. (.....)



24. Mixtures whose components can be distinguished with the naked eye.
(.....)
25. The simplest pure form of a substance whose components cannot be separated by physical or chemical means. (.....)
26. A pure substance formed as a result of the chemical combination of two or more elements in a fixed mass ratio, whose components can be separated by chemical means. (.....)
27. A symbolic formula that expresses the type and number of atoms of the elements that make up the molecule (.....)
28. An alloy that retains its strength at high temperatures and is used in the manufacture of military aircraft structures. (.....)
29. Properties that can be observed and some of which can be measured.
(.....)
30. Properties that only appear when a chemical reaction occurs that leads to a change in the shape and structure of the substance. (.....)

2

Choose the correct answer:

Lesson 1

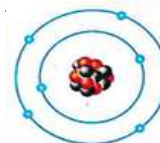
1- What is the subatomic component that has the smallest mass?

- (A) Proton (B) Neutron (C) Electron (D) Nucleon

2- Which of the following subatomic components has a mass of 1 u?

- (A) Proton only (B) Electron only
(C) Each of neutron and electron (D) Each of neutron and proton

3- The opposite figure shows the structure of the atom (X).



What is the symbol that represents this atom?

- (A) ${}^{13}_7X$ (B) ${}^{13}_6X$ (C) 6_7X (D) 7_6X

4- Which of the following atoms has number of neutrons equals twice the number of protons in it's nucleus ?

- (A) 1_1H (B) 3_1H (C) 4_2He (D) 7_2He

5- The nucleus of potassium atom contains 19 protons, then the electron with the highest energy in this atom is found in the

- (A) first energy level (B) second energy level
(C) third energy level (D) fourth energy level



6- What is the number that is the same in all the atoms of the same element ?

- (A) Mass number (B) Number of electrons
(C) Number of neutrons (D) Number of nucleons

7- The electrons of an atom of an element are distributed in 3 energy levels, and the outermost energy level contains 3 electrons, while its nucleus contains 14 neutrons, its mass number is

- (A) 3 (B) 13 (C) 14 (D) 27

8- Some fertilizers contain element which is necessary for making plant leaves green.

- (A) carbon (B) phosphorus (C) nitrogen (D) sulphur

9- The chemical symbol of the element sulphur is

- (A) Si (B) S (C) K (D) Ca

10- The atomic number is equal to the mass number in an element when the nucleus does not contain

- (A) electrons (B) protons (C) neutral particles (D) positive particles

11- The symbol (n) in the relation ($2n^2$) refers to

- (A) the level number (B) the number of electrons
(C) the number of protons. (D) the symbol of the element

12- The energy level L in the silicon atom $_{14}\text{Si}$ contains

- (A) $2e^-$ (B) $3e^-$ (C) $8e^-$ (D) $18e^-$

13- The isotopes of an element are identical in all of the following, except.....

- (A) atomic number (B) number of protons
(C) number of neutrons (D) number of electrons

14- Which of the following is an isotope of element $^{16}_8\text{O}$?

- (A) Oxygen-8 (B) Oxygen-18 (C) Sulphur-16 (D) Sulphur-18



Choices	Metal with higher Melting point	More reactive metal in reaction with water
(A)	Lithium	Lithium
(B)	Lithium	Potassium
(C)	Potassium	Lithium
(D)	Potassium	Potassium

[illegible]

☐ A Element (W): 2,8,1
 ☐ B Element (X): 2,4

☐ C Element (Y): 2,8,2
 ☐ D Element (Z): 2,8

(A) Elements (X) and (Y) are definitely in the same period.

(B) The number of electrons in the energy level K of both elements (X) and (Y) is equal.

(C) The number of electrons in the last energy level of element (Y) definitely exceeds that in element (X) by 5.

(D) The number of nucleons in the nucleus of element (Y) exceeds that in the nucleus of element (X) by 5.

(A) **S** **(B)** **P** **(C)** **d** **(D)** **f**

20- The elements of d-block are known as

- (A) inert elements (B) transitional metals (C) alkali (D) Alkaline earth

21- The element whose energy level M contains 2 electrons is located in the of the modern periodic table.

- (A) period 2, group 3A (B) period 3, group 2A
(C) Operiod 2, group 4A (D) period 4, group 2A

22- An element is located in period 3, group 3A and its nucleus contains 14 neutrons, so its mass number is

- (A) 30 (B) 27 (C) 24 (D) 20

23- Which of the following represents the Lewis structure of nitrogen atom, N?

- (A) $\begin{array}{c} \cdot\cdot \\ N \end{array}$ (B) $\begin{array}{c} \cdot\cdot \\ \cdot N \cdot \\ \cdot \end{array}$ (C) $\begin{array}{c} \cdot\cdot \\ \cdot N \cdot \\ \cdot\cdot \end{array}$ (D) $\begin{array}{c} \cdot\cdot \\ \cdot N \cdot \\ \cdot\cdot \end{array}$

24- Which of the following elements which has the smallest atomic radius ?

- (A) ${}_{17}\text{Cl}$ (B) ${}_{53}\text{I}$ (C) ${}_9\text{F}$ (D) ${}_{35}\text{Br}$

25- The atomic number of the most active halogen is

- (A) 19 (B) 35 (C) 17 (D) 9

Lesson 3

26- is from heterogeneous mixtures.

- (A) Natural milk (B) Oil in water (C) Drinking water (D) Disinfectants

27- When table salt and sand are stirred together in water, a is formed.

- (A) heterogeneous mixture (B) solution
(C) homogeneous mixture (D) compound

28- Which of the following describes the properties of copper metal ?

Choices	Melting point	Sinking in water	Conducting electricity
(A)	-40°C	X	✓
(B)	8°C	X	✓
(C)	100°C	✓	X
(D)	1083°C	✓	✓

29- All of the following are physical properties of a piece of calcium carbonate, except that it

- (A) is solid (B) doesn't dissolve in water
(C) is white in color (D) produces gas bubbles with vinegar

30- The following table shows samples of different substances:

Sample	Shiny	Flexible	Conducts electricity
(1)	X	X	✓
(2)	✓	X	X
(3)	X	✓	X
(4)	✓	✓	✓

Which sample, its substance can be used in making water hose?

- (A) Sample (1) (B) Sample (2) (C) Sample (3) (D) Sample (4)

31- The element whose molecule consists of two atoms is

- (A) mercury oxide (B) bromine (C) sodium chlorid (D) sodium

32- All of the following molecules consist of two elements, except molecule.

- (A) water (B) hydrogen chloride (C) oxygen (D) methane

33- Vitamin D regulates the level of in the blood.

- (A) Mg (B) Ca (C) Cl (D) Na

34- From the chemical properties of sodium carbonate

- (A) it dissolves in water (B) it is a good conductor of electricity
(C) it forms gas bubbles with lemon (D) its melting point is high

35- Balloons can be filled with

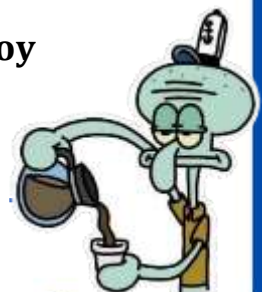
- (A) oxygen (B) nitrogen (C) chlorine (D) helium

36- What are the physical properties that should be found in a new substance used in manufacturing aircraft structures?

- (A) Heavy and hard (B) Flexible and low density
(C) Strong and low density (D) Shiny and good conductor of electricity

37- Which of the following is considered a compound?

- (A) Egyptian blue dye (B) Aluminum - Titanium alloy
(C) Stainless steel alloy (D) Silicon



3

Complete the following sentences:

Lesson 1

1. Atoms are composed of a very small space called
2. Nucleus contain two types of particles called and
3. Proton symbol is Its charge is and its mass =
4. Electron symbol is Its charge is and its mass=
5. Neutron symbol is Its charge is and its mass=
6. The orbits in which electrons revolve around the nucleus are called and there areof them.
7. As we move away from the nucleus energy of the level is
8. The energy of level M is greater than the energy of level and less than the energy of level
9. The number of electrons that saturate the first energy levels is determined by the relationship, where (n) is referred to
10. Any energy level does not hold more than 8 electrons except for level
11. The outer energy level of metals contains less than electrons, while non-metals contain more than electrons.
12. Element (A) has two electrons in the outer energy level (M), so its type is (B) has six electrons in outer energy level (L) so its type is

Lesson 2

13. The scientist discovered that the nucleus of an
14. atom contains positive protons.
15. All metals are solid substances except is liquid.
16. Non-metals are solid materials such as and gaseous materials such as and but the only liquid is
17. The period starts with elements of group and is end by the elements of group
18. The second period begins with the elements of group and ends with the elements of group
19. The modern periodic table consists of periods and groups
20. The modern periodic table consists of blocks.
21. The elements of block S are located in the table and consist of 2 groups.
22. The elements of block. are located below the periodic table and consist of
23. The elements of the noble gases are located in the p block, which consists of groups

24. The elements of block are located in the middle of the periodic table and it consists of groups
25. Boiling point of bromine than the boiling point of chlorine
26. Elements in the same group are similar in level and
27. The scientific basis on which Mendeleev's table was
28. The scientific basis on which Moseley's table was
29. The scientific basis on which the modern periodic table was and
30. Moseley discovered that the properties of elements are related to its and not to its
31. The elements of block p begin with group and end with group The halogens and noble gases are found in the elements of block
32. All elements of block are solid metals except is a gaseous non-metal.
33. The number of elements in the first period is elements, while the number of elements in the fourth period is elements.
34. The transition elements begin to appear from period and consist of groups.
35. Elements of the alkali group their chemical activity as we move from top to bottom.
36. Elements of the halogen group their chemical activity as we move from top to bottom.
37. The radius is proportional to the atomic number of the elements in the same period.
38. Silicon and germanium are considered
39. are substances whose components cannot be
40. separated by chemical or physical means.
41. The components of water can be separated using a device called
42. Water is electrically decomposed into two elements and
43. Mixtures are divided into mixtures and mixtures.
44. mixtures their components cannot be seen by naked eye.
45. All substances are composed of small, identical units called
46. molecules are composed of atoms of the same type, while molecules of are composed of atoms of different elements.
47. The number of atoms in a single molecule in some organic compounds may reach several thousand, as in and



Lesson 3

48. A pure substance consisting of two or more elements in a fixed mass ratio.
49. Nitric acid consists of three atoms of one atom of hydrogen, and one atom of
50. Methane molecules are from while nitric acid molecules are from
51. Iron and cork can be distinguished by the difference in their
52. Helium is used to fill while nitrogen gas is used to fill
53. Carbon is considered a atom molecule while is a multi-atom molecule

4

put (✓) or (X) and correct the wrong one:

Lesson 1

- 1- Dalton considered the atom to be indivisible. ()
- 2- The charge of a proton is equal to the charge of an electron in quantity and type. ()
- 3- Protons are the smallest subatomic components in terms of mass. ()
- 4- The atomic number is written above the left side of the symbol of the element. ()
- 5- The atom containing 13 protons, 14 neutrons and 13 electrons is electrically neutral. ()
- 6- Electrons revolve inside the nucleus in energy levels. ()
- 7- The energy of the level increases as it gets closer to the nucleus. ()
- 8- The third energy level in an atom is located between M and K levels and can be saturated with 8 electrons. ()
- 9- The number of neutrons is twice the number of protons in the nucleus of tritium isotope. ()
- 10- Magnesium-24 is identical to magnesium-25 in the number of protons. ()

Lesson 2

- 11- The number of elements known so far is 118. ()
- 12- The modern periodic table consists of 9 horizontal periods and 13 vertical groups. ()
- 13- Argon and helium are both active gases. ()
- 14- The p-block in the modern periodic table consists of 5 vertical groups ()
- 15- Elements in the same period have similar chemical properties. ()

- 16- An element is located in period 1 and group 0 has an atomic number of 1. ()
- 17- The valency of an element in group 4A equals the group number. ()
- 18- The elements of the alkali metals and halogens are both monovalent. ()
- 19- The atomic radius increases in the same group as the atomic number increases. ()
- 20- Chlorine is a gaseous element with a boiling point lower than 25°C. ()

Lesson 3

- 21- The components of mixtures can be separated by chemical methods. ()
- 22- A mixture of sand and water can be separated by magnetic separation. ()
- 23- When water is electrolyzed,, compounds molecules are produced. ()
- 24- The number of atoms in an oxygen molecule is equal to the number of atoms in an ozone molecule. ()
- 25- Vitamin A regulates the levels of calcium and phosphorus in the blood. ()
- 26- Physical properties of water can be observed directly and some can be measured. ()
- 27- The density of cork is less than that of water, so it floats on its surface. ()
- 28- It is possible to distinguish between a block of butter and a sheet of aerogel by their melting points. ()
- 29- Nitrogen gas is not affected by high temperatures. ()
- 30- Lemon and toothpaste can be distinguished using two litmus papers ()

5

Correct the underlined words in the following sentences:

Lesson 1

- 1- The Sphinx is made of sandstone.
- 2- Matter consists of atoms, which in turn consist of smaller units called molecules.
- 3- The mass of subatomic components is estimated in millilitres.
- 4- The chemical symbol of magnesium is MG.
- 5- The number of nucleons in the nucleus of the element ${}_{13}^{27}\text{X}$ equals 143.
- 6- The number of energy levels in the heaviest atoms is 9 levels.
- 7- Chlorine-37 isotope differs from chlorine-35 isotope as it contains a greater neutrons number of protons.
- 8- The nucleus of a tritium atom contains a proton and a neutron.

Lesson 2

لا تنتظر من يزورك
أرورك بنفسك ولنفسك



- 9- In Mendeleev's periodic table elements were arranged according to their atomic numbers.
 - 10- Mendeleev discovered that the properties of elements repeated periodically at the beginning of each sublevel.
 - 11- Most elements in the periodic table are liquids at room temperature.
 - 12- The electron configuration of an alkaline earth metals end with one electron, while that of halogens end with two electrons.
 - 13- Alkali metals begin to appear in period 4 in the modern periodic table.
 - 14- Lewis dot structure of a beryllium atom Be includes four unpaired electrons.
 - 15- The valency of halogens is 7.
 - 16- The melting point of lithium is equal to the melting point of sodium.
-
- 17- Methane is considered an inorganic compound.
 - 18- Oxygen is considered a mixture.
 - 19- A table salt solution can be separated by filtration.
 - 20- Helium is used to fill car tires.
 - 21- Density and melting point are chemical properties of matter.
 - 22- Heterogeneous mixtures cannot be separated physical means.

Lesson 3

6

Give reason for (scientific explanation) for each of the following:

- 1- The nucleus of an atom is positively charged
- 2- The mass of an atom is concentrated in the nucleus
- 3- An atom is electrically neutral in its normal state
- 4- The mass number is equal to the atomic number in a hydrogen atom
- 5- It is recommended we must not overuse agricultural fertilizers.
- 6- The symbol for sodium is Na not S.
- 7- The mass number is greater than the atomic number.

Lesson 1



8- The L level is saturated with eight electrons.

9- The M level is filled with electrons before the N level.

Lesson 2

10- Both $_{13}\text{Al}$ and $_{17}\text{Cl}$ are located in the same period in the modern periodic table.

11- Moseley rearranged the elements in ascending order according to their atomic numbers in his table.

12- Scientists have made an attempts to classify the elements.

13- Semimetals cannot be identified from their electronic distribution.

14- $_{20}\text{Ca}$ and $_4\text{Be}$ are in the same group.

15- Elements in the same group have similar chemical properties.

16- Calcium ($_{20}\text{Ca}$) is a metal, while chlorine ($_{17}\text{Cl}$) is a non-metal.

17- Sodium ($_{11}\text{Na}$) is one of the alkali metals.

18- Fluorine ($_9\text{F}$) is one of the halogens.

أنت أقوى مما تتخيل ..
أمن بقدراتك !

19- Calcium ($_{20}\text{Ca}$) is one of the alkaline earth metals.

20- The valency of $_{11}\text{Na}$ and $_{17}\text{Cl}$ is monovalent.

21- The valency of $_{10}\text{Ne}$ = zero.

22- The melting and boiling points of sodium and potassium are higher than room temperature.

23- The melting and boiling points of chlorine are lower than room temperature.

24- The valency of alkaline earth metal is divalent.



25- The valency of halogens is monovalent

Lesson 3

26- A hydrogen molecule is considered an element, while a sodium chloride molecule is considered a compound.

27- Sea water is considered a homogeneous mixture.

28- Wood floats on water, while iron sinks.

29- Iron filings can be easily separated from flour.

30- Nitric acid is considered an inorganic compound.

31- Nitrogen is now used to fill car tires instead of air.

32- Helium gas is used to fill balloons.

33- Stainless steel alloy is used in the manufacture of cooking utensils.

34- Aircraft structures are made of aluminum alloy and titanium.

35- Aerogel is used to make jackets for research scientists in Antarctica.

36- Vitamin D is an important vitamin for the human body.

7

What happens in the following cases:

Lesson 1

1- The number of positive protons inside the nucleus is equal to the number of negative electrons revolving around it.

2- Excessive use of fertilizers.

3- The absence of neutrons in the nucleus of the protium atom.

Lesson 2

4- Increase the atomic number of the elements in a single group from top to bottom relative to the radius.

5- Increase the atomic number of the elements in the same period from left to right relative to the radius.

6- The number of electrons in the outer energy level is less than 4 electrons for the type of element.

7- The number of electrons in the outer energy level is filled completely with electrons for the type of element.

8- Increase in radius for the boiling and melting points of alkali elements.

9- Increase in radius for the boiling and melting points of halogen elements.

Lesson 3

10- electrolysis of acidified water.

11- Heating red mercury oxide.

12- Dipping litmus paper in lemon juice.

13- Placing a piece of wood in water.

14- Use of iron in manufacture of cooking utensils.

15- Use of carbon dioxide gas to fill balloons.

8

Answer the following:

Lesson 1

1- New Zealand scientist won the Nobel Prize in Chemistry in 1908.

2- Developed the first scientific theory about atoms

3- The building unit of matter

- 4- Everything that has mass and volume and occupies a space
- 5- Positively charged particles found inside the nucleus
- 6- Particles whose mass can be neglected but whose charge is not.
- 7- Particles whose charge can be neglected but whose mass is not.
- 8- Compounds used to improve agricultural production
- 9- An element necessary for the greening of plant leaves
- 10- An element necessary for strengthening plant roots
- 11- An element necessary for healthy plant growth

Lesson 2

- 12- What are the most important attempts that have been made to classify elements?
.....
- 13- What is the scientific basis for classifying elements in Mendeleev's periodic table?
.....
- 14- What is the scientific basis for classifying elements in Moseley's periodic table?
.....
- 15- What is the scientific basis for classifying elements in the modern periodic table?
.....

How to distinguish between:

- 16- Elements of group (1A) and elements of group (7A) in terms of: Group name - the block which they belong to.
.....
- 17- Group (2A) elements and Group (0) elements in terms of: Group name - the block which they belong to.
.....

Lesson 3

- 18- (Sand, iron filings) mixture, and sugar mixture in water in terms of: Separation methods.
.....
- 19- Oxygen and water molecules in terms of: type of molecules.
.....
- 20- O_3 and C molecules in terms of: name - number of atoms that make up the molecule
.....

21- Water and honey in terms of: viscosity.

.....

22- Cork and iron in terms of: density.

.....

23- Toothpaste and lemon in terms of: effect on litmus paper leaves.

.....

24- Butter mold and aerogel in terms of: melting point.

.....

9

Define the following (what is meant by)

Lesson 1

Matter	.....
Atom	.....
Fertilizers	.....
Isotopes	.....
Atomic number	.....
Mass number	.....
Mendeleev's periodic table	.....
Moseley's periodic table	.....
Modern periodic table	.....
Metals	.....
Non-metals	.....
Semi-metals (Metalloids)	.....
Period number	.....
Group number	.....
Noble gases	.....
Valence electrons	.....
Lewis structure	.....
Valence of the element	.....

Lesson 2

Pure substances.	.....
Compounds.	.....
Elements	.....
Mixtures.	.....
Boiling point	.....
Melting point	.....
Homogeneous mixtures.	.....
Heterogeneous mixtures.	.....
Molecular formula	.....
Physical properties	.....
Chemical properties	.....
Organic compounds	.....
Inorganic compounds	.....
Viscosity	.....
Density	.....
Aerogel	.....

10

Various questions

Lesson 1

1- Draw the electronic configuration of the atoms of the following elements:



answers

2- Answer this questions

A) If you know that the atomic number of sodium is 11 and its mass number is 23 **find**: the number of electrons, the number of protons and the number of neutrons?

.....

B) An element has a mass number of 35 and 18 neutrons in its nucleus

Calculate: the number of protons

.....

3- Element (X) has 13 protons and the number of its neutron is increased by one more than its proton Find:

1- Number of electrons 2- Number of neutrons

3- Number of electrons in the last energy level

4- Element (Y) has electrons distributed in two energy levels, with its last energy level containing 4 electrons and its nucleus containing 6 neutrons.

1- Draw the electronic configuration of the element. **K=2, L=4**

1- Find the mass number

.....

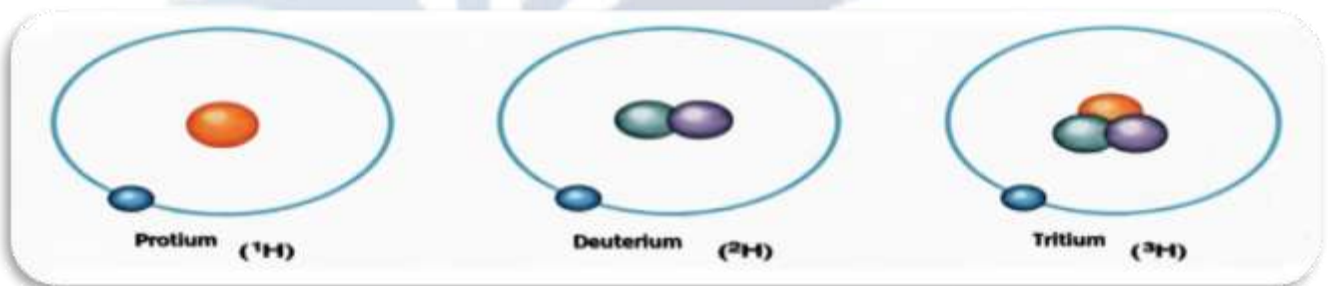
2- Write the symbol for this element, explaining the numbers for A and Z

.....

5- Write the symbols of the following elements:

- | | | | | |
|-----------|---------------|------------|------------|--------------|
| 1. Zinc | 2. Potassium | 3. Silicon | 4. Gold | 5. Silver |
| 6. Copper | 7. Phosphorus | 8. Lead | 9. Mercury | 10. Chromium |
-

6- Study the opposite figure carefully, which represents the electronic distribution of a hydrogen atom, then answer the following questions:



1- What are the three figure represent?

.....

2- What is the differences between them?

.....

3- What are the similarities between them?

4- Write the mass number for each isotope of hydrogen? and and

Lesson 2

7- Complete the following table:

Group number	.....	7A	.....	1A
Group name	Nobel gases	.....	Alkaline earth	.....

8- complete the following table:

The element	Ne ₁₀	O ₈	Li ₃
Electron configuration	K=2 L=8	.....	.....
Lewis structure	.....		.....
Valency	.....	.....	Monovalent

9- What are the results of increasing the atomic number of each of the following:

1- Alkaline earth elements "in terms of chemical activity"

2- Halogen elements "in terms of melting and boiling points"

3- Group 1 elements "in terms of atomic radius"

10- Arrange the following: (from right to left in the modern periodic table)
Transition element-semi-metal - inert gas - strong metal - non-metal

11- Identify the location of the following elements in the modern periodic table:

1-₂He

2- ₉F

3- ₁₄Si

12- State the number indicating each of the following:

1- The number of elements in the modern periodic table

2- The number of elements in the first period

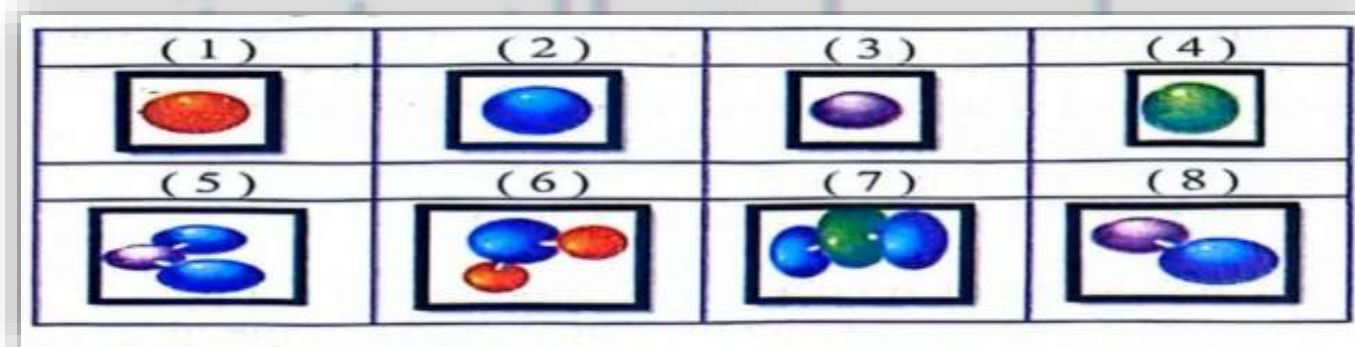
3- The number of elements in the third period

4- The number of blocks in the modern periodic table

- 5- The number of groups in block d
- 6- Number of groups in block p
- 7- Number of groups in the modern periodic table
- 8- Number of energy levels filled with electrons in a helium atom 2
- 9- Group number of the element sulfur 16
- 10- Number of single electrons in the outer energy level of a potassium atom 19
- 11- Atomic number of an element in the third period, group 5.
- 12- Atomic number of an alkali metal in the third period
- 13- Valency of a halogen element.
- 14- The atomic number of a monovalent metal
- 15- The atomic number of a divalent nonmetal element is in the third period.
- 16- The atomic number of an element is at the beginning of the third period.
- 17- The atomic number of an element at the end of the second period
- 18- The atomic number of an element at the end of the p block and in the third period
- 13- Calculate the atomic number for each of the following:**
- 1- An element located in the second period and the fifth group.
- 2- A divalent metallic element located in the second period.
- 3- A divalent non-metallic element located in the second period.
- 4- An element located at the beginning of the second period.
- 5- An element located at the end of the third period.
- 6- An element from the alkali metals located in the fourth period.
- 7- An element from the noble gases located in the first period.
- 8- An element from the alkaline earth metals located in the third period.
- 9- The last energy level M has the same number of electrons as level K

Lesson 3

- 14- Observe the following figures carefully and answer the following questions:**



Complete the following sentences:

- 1) Figure No. represents a carbon dioxide molecule, while Figure No. represents a water molecule.
- 2) Figure No. represents an oxygen atom, while Figure No. represents a carbon atom.
- 3) Figure No. represents a hydrogen atom, while Figure No. represents a sulfur atom.
- 4) The shape number represents a sulfur dioxide molecule, while the shape number represents a carbon monoxide molecule.

15- Give one example for each of the following:

- 1- Organic compound molecule
- 2- Element molecule consisting of a single atom
- 3- Physical property used to distinguish between materials
- 4- Chemical property used to distinguish between materials
- 5- Alloy made of iron with added materials resistant to rust.
- 6- An alloy used in aircraft manufacturing
- 7- A low-density transparent material with 99.8% air content
- 8- A compound used to color house facades, papyrus, and statues.
- 9- A substance that regulates calcium and phosphorus levels in the blood.

11**Compare between:****Lesson 1****1- Protons, neutrons, and electrons in terms of:**

Type of charge /Location /Mass

2- The three isotopes of hydrogen in terms of:

a-Name of isotope

b- Number of neutrons

c - Mass number

d-Symbol

Lesson 2**3- S-block elements and P-block elements in terms of:**

Number of groups /Their location in the periodic table

4- Group 1A, 2A, 7A and zero

Name-block-position-example -type

5- Metals and non-metals in terms of:

Physical state/Their location in the periodic table/Number of electrons in the last energy level

Lesson 3

- 6- **Homogeneous mixture and heterogeneous mixture. In terms of:**
Definition- Examples- Methods of Separation
- 7- **Sugar in water mixture and sand in water mixture In terms of:**
separation method
- 8- **Organic compounds molecules and inorganic compounds molecules in terms of:**
Composition- Examples
- 9- **Nitric oxide NO and magnesium carbonate $MgCO_3$ In terms of:**
number of elements - number of atoms
- 10- **Helium gas and nitrogen gas In terms of:**
properties - usage

تمت بحمد الله تعالى
بالتوفيق لجميع الطلاب

أنا فخور بـ
يا هديقي
وفخور
بمحاولاتك
وبالمجهود
الذي تبذله



1

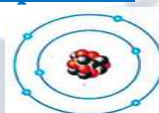
Write scientific term for each of the following sentences:

1. Everything that has mass and volume or occupies space. (**matter**)
2. The building and structural unit of all matter. (**the atom**)
3. The first scientific theory about atoms. (**Dalton's theory**)
4. The first experimental model of the atom. (**Rutherford's model**)
5. Positively charged particles found inside the nucleus of an atom (**proton**)
6. A subatomic particle whose charge can be neglected but whose mass cannot be neglected (**Neutron**)
7. Negatively charged particles with a very small mass that revolve around the nucleus in energy levels. (**electrons**)
8. Chemical compounds used in improving agricultural production. (**NPK fertilizer**)
9. The total number of protons and neutrons that make up the nucleus of an atom. (**mass number**)
10. Imaginary areas in which electrons revolve around the nucleus, each according to its energy. (**energy levels**)
11. Different forms of atoms of the same element have the same atomic number but differ in their mass numbers. (**isotopes**)
12. A scientist who arranged the elements in ascending order according to their atomic numbers (**Moseley**)
13. A scientist who arranged the elements in ascending order according to their atomic masses (**Mendeleev**)
14. A scientist who added the zero group to Mendeleev's table (**Moseley**)
15. A scientist who proposed an easy way to express the number of valence electrons around the atomic symbol. (**Lewis**)
16. An inert gas located in the first period. (**Helium**)
17. A liquid metallic element. (**Mercury**)
18. A liquid non-metallic element. (**Bromine**)
19. The smallest alkali metals in terms of radius. (**Lithium**)
20. The largest metals in terms of radius (**cesium**)
21. The most active elements of group 7 (**fluorine**)
22. The halogens with the lowest melting and boiling points (**fluorine**)
23. A substance consisting of two or more materials that are not chemically combined. (**Mixture**)
24. Mixtures whose components can be distinguished with the naked eye. (**Heterogeneous**)

25. The simplest pure form of a substance whose components cannot be separated by physical or chemical means. (**element**)
26. A pure substance formed as a result of the chemical combination of two or more elements in a fixed mass ratio, whose components can be separated by chemical means. (**compound**)
27. A symbolic formula that expresses the type and number of atoms of the elements that make up the molecule (**Molecular formula**)
28. An alloy that retains its strength at high temperatures and is used in the manufacture of military aircraft structures. (**Aluminum-titanium alloy**)
29. Properties that can be observed and some of which can be measured. (**physical properties**)
30. Properties that only appear when a chemical reaction occurs that leads to a change in the shape and structure of the substance. (**Chemical properties**)

2

Choose the correct answer:

- 1- What is the subatomic component that has the smallest mass?
 (A) Proton (B) Neutron (C) **Electron** (D) Nucleon
- 2- Which of the following subatomic components has a mass of 1 u?
 (A) Proton only (B) Electron only
 (C) Each of neutron and electron (D) **Each of neutron and proton**
- 3- The opposite figure shows the structure of the atom (X). 
 What is the symbol that represents this atom?
 (A) ${}^{13}_{7}\text{X}$ (B) ${}^{13}_{6}\text{X}$ (C) ${}^{6}_{7}\text{X}$ (D) ${}^{7}_{6}\text{X}$
- 4- Which of the following atoms has number of neutrons equals twice the number of protons in it's nucleus ?
 (A) ${}^1_1\text{H}$ (B) ${}^3_1\text{H}$ (C) ${}^4_2\text{He}$ (D) ${}^7_2\text{He}$
- 5- The nucleus of potassium atom contains 19 protons, then the electron with the highest energy in this atom is found in the
 (A) first energy level (B) second energy level
 (C) third energy level (D) **fourth energy level**
- 6- What is the number that is the same in all the atoms of the same element ?
 (A) Mass number (B) **Number of electrons**

- (C) Number of neutrons (D) Number of nucleons

7- The electrons of an atom of an element are distributed in 3 energy levels, and the outermost energy level contains 3 electrons, while its nucleus contains 14 neutrons, its mass number is

- (A) 3 (B) 13 (C) 14 (D) 27

8- Some fertilizers contain element which is necessary for making plant leaves green.

- (A) carbon (B) phosphorus (C) nitrogen (D) sulphur

9- The chemical symbol of the element sulphur is

- (A) Si (B) S (C) K (D) Ca

10- The atomic number is equal to the mass number in an element when the nucleus does not contain

- (A) electrons (B) protons (C) neutral particles (D) positive particles

11- The symbol (n) in the relation ($2n^2$) refers to

- (A) the level number (B) the number of electrons
(C) the number of protons. (D) the symbol of the element

12- The energy level L in the silicon atom ${}_{14}\text{Si}$ contains

- (A) $2e^-$ (B) $3e^-$ (C) $8e^-$ (D) $18e^-$

13- The isotopes of an element are identical in all of the following, except

- (A) atomic number (B) number of protons
(C) number of neutrons (D) number of electrons

14- Which of the following is an isotope of element ${}^{16}_8\text{O}$?

- (A) Oxygen-8 (B) Oxygen-18 (C) Sulphur-16 (D) Sulphur-18

15- Which of the following choices represents the two metals lithium and potassium?

Choices	Metal with higher Melting point	More reactive metal in reaction with water
(A)	Lithium	Lithium
(B)	<u>Lithium</u>	<u>Potassium</u>
(C)	Potassium	Lithium

Ⓓ	Potassium	Potassium
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16- The following figure represents a section in the periodic table:

W												X			
	Y														Z

Which of the following represents the correct electron configuration for the mentioned element?

- (A) Element (W): 2,8,1
 (B) Element (X): 2,4
 (C) Element (Y): 2,8,2
 (D) Element (Z): 2,8

17- Two elements (X) and (Y), if element (X) is in period 2 of the periodic table and the number of the protons in the nucleus of element (Y) exceeds that in the nucleus of element (X) by 5, Which of the following is correct?

- (A)** Elements (X) and (Y) are definitely in the same period.
- (B)** The number of electrons in the energy level K of both elements (X) and (Y) is equal.
- (C)** The number of electrons in the last energy level of element (Y) definitely exceeds that in element (X) by 5.
- (D)** The number of nucleons in the nucleus of element (Y) exceeds that in the nucleus of element (X) by 5.

18- The number of elements in period 3 of the periodic table is equal to

- Ⓐ 2 Ⓑ 7 Ⓒ 8 Ⓓ 10

19- The zero group in the modern periodic table belongs to block

- (A)** **S** **(B)** **P** **(C)** **d** **(D)** **f**

20- The elements of d-block are known as

- Ⓐ inert elements Ⓑ transitional metals Ⓒ alkali Ⓓ Alkaline earth

21- The element whose energy level M contains 2 electrons is located in the of the modern periodic table.

- ☐ A period 2, group 3A
 ☐ B period 3, group 2A
- ☐ C Operiod 2, group 4A
 ☐ D period 4, group 2A

22- An element is located in period 3, group 3A and its nucleus contains 14 neutrons, so its mass number is

- (A) 30 (B) 27 (C) 24 (D) 20

23- Which of the following represents the Lewis structure of nitrogen atom, N?

- (A) $\cdot\cdot$
N (B) $\cdot\cdot$
 $\cdot$ N $\cdot$ (C) $\cdot\cdot$
N $\cdot\cdot$ (D) $\cdot\cdot$
N $\cdot\cdot$

24- Which of the following elements which has the smallest atomic radius ?

- (A) $_{17}\text{Cl}$ (B) $_{53}\text{I}$ (C) $_{9}\text{F}$ (D) $_{35}\text{Br}$

25- The atomic number of the most active halogen is.....

- (A) 19 (B) 35 (C) 17 (D) 9

26- is from heterogeneous mixtures.

- (A) Natural milk (B) Oil in water (C) Drinking water (D) Disinfectants

27- When table salt and sand are stirred together in water, a is formed.

- (A) heterogeneous mixture (B) solution
(C) homogeneous mixture (D) compound

28- Which of the following describes the properties of copper metal ?

Choices	Melting point	Sinking in water	Conducting electricity
(A)	-40°C	X	✓
(B)	8°C	X	✓
(C)	100°C	✓	X
(D)	<u>1083°C</u>	<u>✓</u>	<u>✓</u>

29- All of the following are physical properties of a piece of calcium carbonate, except that it

- (A) is solid (B) doesn't dissolve in water
(C) is white in color (D) produces gas bubbles with vinegar

30- The following table shows samples of different substances:

Sample	Shiny	Flexible	Conducts electricity
(1)	X	X	✓

(2)	✓	X	X
(3)	X	✓	X
(4)	✓	✓	✓

Which sample, its substance can be used in making water hose?

- (A) Sample (1) (B) Sample (2) (C) Sample (3) (D) Sample (4)

31- The element whose molecule consists of two atoms is

- (A) mercury oxide (B) bromine (C) sodium chlorid (D) sodium

32- All of the following molecules consist of two elements, except..... molecule.

- (A) water (B) hydrogen chloride (C) oxygen (D) methane

33- Vitamin D regulates the level of in the blood.

- (A) Mg (B) Ca (C) Cl (D) Na

34- From the chemical properties of sodium carbonate

- (A) it dissolves in water (B) it is a good conductor of electricity
(C) it forms gas bubbles with lemon (D) its melting point is high

35- Balloons can be filled with

- (A) oxygen (B) nitrogen (C) chlorine (D) helium

36- What are the physical properties that should be found in a new substance used in manufacturing aircraft structures?

- (A) Heavy and hard (B) Flexible and low density
(C) Strong and low density (D) Shiny and good conductor of electricity

37- Which of the following is considered a compound?

- (A) Egyptian blue dye (B) Aluminum - Titanium alloy
(C) Stainless steel alloy (D) Silicon

3

Complete the following sentences:

- Atoms are composed of a very small space called **nucleus**
- Nucleus contain two types of particles called **protons** and **neutrons** They revolve
- Proton symbol is **p⁺** Its charge is **+1** and its mass = **1 U**

4. Electron symbol is e^{-} Its charge is **-1** and its mass= **1/1836 U**
5. Neutron symbol is **n** Its charge is **0** and its mass= **1 U**
6. The orbits in which electrons revolve around the nucleus are called **energy levels** and there are **seven energy level** of them.
7. As we move away from the nucleus energy of the level is **increase**
8. The energy of level M is greater than the energy of level **L** and less than the energy of level **N**
9. The number of electrons that saturate the first energy levels is **2** determined by the relationship **(2n²)**, where (n) is referred to **energy level number**
10. Any energy level does not hold more than **8** electrons except for level **K**.
11. The outer energy level of metals contains less than **4** electrons, while non-metals contain more than **4** electrons.
12. Element (A) has two electrons in the outer energy level (M), so its type is **metals**, Element (B) has six electrons in outer energy level (L) so its type is **nonmetals**
13. The scientist **Rutherford** discovered that the nucleus of an atom contains positive protons.
14. All metals are solid substances except **mercury** is liquid.
15. Non-metals are solid materials such as **carbon** and **sulfur** gaseous materials such as **oxygen** and **nitrogen** but the only liquid is **bromine**
16. The period starts with elements of group **1 (alkali metals)** and is end by the elements of group **18 (noble gases)**
17. The second period begins with the elements of group **1 (lithium)** and ends with the elements of group **18 (neon)**
18. The modern periodic table consists of **7** periods and **18** groups
19. The modern periodic table consists of **4** blocks.
20. The elements of block S are located **left** in the table and consist of **2** groups.
21. The elements of block. **F** are located below the periodic table and consist of **2 series (lanthanide and actinides)**
22. The elements of the noble gases are located in the **p** block, which consists of **6** groups
23. The elements of block **d** are located in the middle of the periodic table and it consists of **10** groups
24. Boiling point of bromine **more** than the boiling point of chlorine
25. Elements in the same group are similar in **number of electrons in outer most energy level** and **chemical properties**
26. The scientific basis on which Mendeleev's table was **atomic masses**
27. The scientific basis on which Moseley's table was **atomic number**

28. The scientific basis on which the modern periodic table was **atomic number** and **method of filling energy sublevel with electrons**
29. Moseley discovered that the properties of elements are related to its **atomic number** and not to its **atomic masses**
30. The elements of block p begin with group **13 (3A)** and end with group **18 (zero)**
31. The halogens and noble gases are found in the elements of block **p**
32. All elements of block **S** are solid metals except **hydrogen** is a gaseous non-metal.
33. The number of elements in the first period is **2** elements, while the number of elements in the fourth period is **18** elements.
34. The transition elements begin to appear from period **4** and consist of **10** groups.
35. Elements of the alkali group their chemical activity **increase** as we move from top to bottom.
36. Elements of the halogen group their chemical activity **decrease** as we move from top to bottom.
37. The radius is **directly** proportional to the atomic number of the elements in the same period.
38. Silicon and germanium are considered **metalloids**
39. **Elements** are substances whose components cannot be separated by chemical or physical means.
40. The components of water can be separated using a device called **Hofmann voltmeter**
41. Water is electrically decomposed into two elements **hydrogen (H₂)** and **oxygen (O₂)**
42. Mixtures are divided into **homogeneous** mixtures and **heterogeneous** mixtures.
43. **Homogeneous** mixtures their components cannot be seen by naked eye.
44. All substances are composed of small, identical units called **atoms**
45. **Element** molecules are composed of atoms of the same type, while molecules of **compound** are composed of atoms of different elements.
46. The number of atoms in a single molecule in some organic compounds may reach several thousand, as in **plastic polymers** and **blood hemoglobin**
47. **Compound** A pure substance consisting of two or more elements in a fixed mass ratio.
48. Nitric acid consists of three atoms of **oxygen** one atom of hydrogen, and one atom of **nitrogen**

49. Methane molecules are from **organic compounds** while nitric acid molecules are from **inorganic compounds**
50. Iron and cork can be distinguished by the difference in their **density**
51. Helium is used to fill **balloons** while nitrogen gas is used to fill **car tires**
52. Carbon is considered a **monoatomic** atom molecule while **ozone** is a multi-atom molecule

4

put (✓) or (X) and correct the wrong one:

1. Dalton considered the atom to be indivisible. (✓)
2. The charge of a proton is equal to the charge of an electron in quantity and **type**. (X) **differ in type**
3. **Protons** are the smallest subatomic components in terms of mass. (X) **electrons**
4. The atomic **number** is written above the left side of the symbol of the element. (X) **mass**
5. The atom containing 13 protons, 14 neutrons and 13 electrons is electrically neutral. (✓)
6. Electrons revolve **inside** the nucleus in energy levels. (X) **arround**
7. The energy of the level increases as it gets **closer** to the nucleus. (X) **away**
8. The **third** energy level in an atom is located between M and K levels and can be saturated with 8 electrons (X) **second**
9. The number of neutrons is twice the number of protons in the nucleus of tritium isotope. (✓)
10. Magnesium-24 is identical to magnesium-25 in the number of protons. (✓)
11. The number of elements known so far is 118. (✓)
12. The modern periodic table consists of **9** horizontal periods and **13** vertical groups. (X) **7 / 18**
13. Argon and helium are both **active** gases. (X) **inert**
14. The p-block in the modern periodic table consists of **5** vertical groups. (X) **6**
15. Elements in the same **period** have similar chemical properties. (X) **group**

16. An element is located in period 1 and group 0 has an atomic number of **1**.
(☒) **2**
17. The valency of an element in group 4A equals the group number. (☒)
18. The elements of the alkali metals and halogens are both monovalent. (☒)
19. The atomic radius increases in the same group as the atomic number increases. (☒)
20. Chlorine is a gaseous element with a boiling point lower than 25°C.
(☒)
21. The components of mixtures can be separated by **chemical** methods.
(☒) **physical**
22. A mixture of sand and water can be separated by **magnetic** separation.
(☒) **filtration**
23. When water is electrolyzed,, **compounds** molecules are produced.
(☒) **element**
24. The number of atoms in an oxygen molecule is **equal** to the number of atoms in an ozone molecule. (☒) **less**
25. Vitamin **A** regulates the levels of calcium and phosphorus in the blood.
(☒) **D**
26. Physical properties of water can be observed directly and some can be measured. (☒)
27. The density of cork is less than that of water, so it floats on its surface. (☒)
28. It is possible to distinguish between a block of butter and a sheet of aerogel by their melting points. (☒)
29. Nitrogen gas is not affected by high temperatures. (☒)
30. Lemon and toothpaste can be distinguished using two litmus papers
(☒)

5

Correct the underlined words in the following sentences:

- 1- The Sphinx is made of sandstone. **limestone**
- 2- Matter consists of atoms, which in turn consist of smaller units called molecules. **Atom**
- 3- The mass of subatomic components is estimated in millilitres. **Atomic mass U**
- 4- The chemical symbol of magnesium is MG. **Mg**

- 5- The number of nucleons in the nucleus of the element ${}_{13}^{27}\text{X}$ equals 143. **27**
- 6- The number of energy levels in the heaviest atoms is 9 levels. **7**
- 7- Chlorine-37 isotope differs from chlorine-35 isotope as it contains a greater neutrons number of protons. **neutrons**
- 8- The nucleus of a tritium atom contains a proton and a neutron. **deuterium**
- 9- In Mendeleev's periodic table elements were arranged according to their atomic numbers. **messes**
- 10- Mendeleev discovered that the properties of elements repeated periodically at the beginning of each sublevel. **new row**
- 11- Most elements in the periodic table are liquids at room temperature. **solids**
- 12- The electron configuration of an alkaline earth metals end with one electron, while that of halogens end with two electrons. **Two / seven**
- 13- Alkali metals begin to appear in period 4 in the modern periodic table. **Transition elements**
- 14- Lewis dot structure of a beryllium atom Be includes four unpaired electrons. **two**
- 15- The valency of halogens is 7. **1**
- 16- The melting point of lithium is equal to the melting point of sodium. **greater than**
- 17- Methane is considered an inorganic compound. **Nitric acid**
- 18- Oxygen is considered a mixture. **Table salt solution**
- 19- A table salt solution can be separated by filtration. **Evaporation and condensation**
- 20- Helium is used to fill car tires. **Nitrogen**
- 21- Density and melting point are chemical properties of matter. **Physical properties**
- 22- Heterogeneous mixtures cannot be separated physical means. **Pure substance**

6

Give reason for (scientific explanation) for each of the following:

- 1- The nucleus of an atom is positively charged
Because it contains **positively charged protons and neutral neutrons**.
- 2- The mass of an atom is concentrated in the nucleus
Because the mass of electrons is negligible compared to that of both the protons and neutrons found inside the nucleus.
- 3- An atom is electrically neutral in its normal state

Because the energy of negatively charged electrons revolving around the nucleus of the atom is equal to the number of positively charged protons present inside the nucleus.

4- The mass number is equal to the atomic number in a hydrogen atom

Because hydrogen atom doesn't contain neutrons

5- It is recommended we must not overuse agricultural fertilizers.

Because excessive use of fertilizers is harmful to plants, soil, human and animal health, land the environment in general.

6- The symbol for sodium is Na not S.

Because when the name of the element in English differs from its Latin name, so the symbol will be from the letters of its Latin name.

7- The mass number is greater than the atomic number.

Because the mass number equals the sum of the numbers of protons and neutrons in the nucleus of the atom, while the atomic number equals the number of protons only.

8- The L level is saturated with eight electrons.

Due to the relation $(2n^2)$ the number of energy level $L = 2$ so $(2 \times 2^2) = 8$ electrons

9- The M level is filled with electrons before the N level.

Because the energy of the level M is lower than that of the level N.

10- Both $_{13}\text{Al}$ and $_{17}\text{Cl}$ are located in the same period in the modern periodic table.

Because its electrons orbit in 3 energy levels

11- Moseley rearranged the elements in ascending order according to their atomic numbers in his table.

Because he discovered that the periodicity of the properties of elements is related to their atomic numbers and not to their atomic masses, as Mendeleev had believed.

12- Scientists have made an attempts to classify the elements.

To facilitate their study and conclude the relation between elements and their physical and chemical properties.

13- Semimetals cannot be identified from their electronic distribution.

Due to the convergence in the number of electrons in their outermost energy levels of each atom.

14- $_{20}\text{Ca}$ and $_4\text{Be}$ are in the same group.

Because the outermost energy level of its atom contains 2 electrons.

15- Elements in the same group have similar chemical properties.

Because their atoms are similar in the number of electrons in their outermost energy level.

16- Calcium ($_{20}\text{Ca}$) is a metal, while chlorine ($_{17}\text{Cl}$) is a non-metal.

Because the outermost energy level of calcium atom contains 2 electrons while chlorine contains 7 electrons

17- Sodium ($_{11}\text{Na}$) is one of the alkali metals.

Because the outermost energy level of its atom contains 1 electrons.

18- Fluorine ($_{9}\text{F}$) is one of the halogens.

Because the outermost energy level of its atom contains 7 electrons.

19- Calcium ($_{20}\text{Ca}$) is one of the alkaline earth metals.

Because the outermost energy level of its atom contains 2 electrons.

20- The valency of $_{11}\text{Na}$ and $_{17}\text{Cl}$ is monovalent.

Because the Lewis structure for both contains one unpaired electrons.

21- The valency of $_{10}\text{Ne}$ = zero.

Because their outermost energy level is occupied by electrons, so their Lewis structure does not contain any single electrons.

22- The melting and boiling points of sodium and potassium are higher than room temperature.

Because sodium precedes potassium in the alkali metals group, the group in which, the melting point of alkali metals decreases by increasing in atomic number

23- The melting and boiling points of chlorine are lower than room temperature.

Because chlorine is gaseous element at room temperature

24- The valency of alkaline earth metal is divalent.

Because the Lewis structure contains two unpaired electrons.

25- The valency of halogens is monovalent

Because the Lewis structure contains one unpaired electrons.

26- A hydrogen molecule is considered an element, while a sodium chloride molecule is considered a compound.

Because hydrogen cannot be decomposed into simpler forms by physical or chemical methods.

while the components of sodium chloride molecule can be separated into sodium and chloride

27- Sea water is considered a homogeneous mixture.

Because the components of the table salt solution cannot be distinguished by the naked eye

28- Wood floats on water, while iron sinks.

Because the density of wood is less than that of water, while the density of iron is greater than that of water.

29- Iron filings can be easily separated from flour.

Because iron can be separated by a magnet (magnetic separation)

30- Nitric acid is considered an inorganic compound.

Because it contains hydrogen ,nitrogen and oxygen

31- Nitrogen is now used to fill car tires instead of air.

Because it is not affected by the change in temperature and does not react with rubber.

32- Helium gas is used to fill balloons.

Because its density is lower than that of air and it is non-flammable.

33- Stainless steel alloy is used in the manufacture of cooking utensils.

Because it is characterized by resistant to rusting.

34- Aircraft structures are made of aluminum alloy and titanium.

Because it is lighter than aluminum alone and retains its strength at high temperatures.

35- Aerogel is used to make jackets for research scientists in Antarctica.

Because it is the lightest known solid material and it is characterized by highly durable and has an excellent insulating properties.

36- Vitamin D is an important vitamin for the human body.

Because it regulates calcium and phosphorus levels in the blood to prevent osteoporosis

7

What happens in the following cases:

1- The number of positive protons inside the nucleus is equal to the number of negative electrons revolving around it.

The atom is electrically neutral.

2- Excessive use of fertilizers.

Plants, soil, human health, animals, and the environment in general will be harmed.

3- The absence of neutrons in the nucleus of the protium atom.

The atomic number is equal to the mass number.

4- Increase the atomic number of the elements in a single group from top to bottom relative to the radius.

The atomic radius increases as we move down a group from top to bottom

5- Increase the atomic number of the elements in the same period from left to right relative to the radius.

The atomic radius decreases as we move from left to right across a period.

6- The number of electrons in the outer energy level is less than 4 electrons for the type of element.

The element is classified as a metal.

7- The number of electrons in the outer energy level is filled completely with electrons for the type of element.

The element is classified as a noble gas (inert gas)

8- Increase in radius for the boiling and melting points of alkali elements.

The boiling and melting points decrease as the radius increases

9- Increase in radius for the boiling and melting points of halogen elements.

The boiling and melting points increase as the radius increases

10- electrolysis of acidified water.

Water decomposes into its elements: hydrogen gas (H_2) and oxygen gas (O_2)

11- Heating red mercury oxide.

Red mercury oxide decomposes into mercury metal (Hg) and oxygen gas (O_2).

12- Dipping litmus paper in lemon juice.

The blue litmus paper turns red

13- Placing a piece of wood in water.

The wood floats on the water surface because the density of wood is less than the density of water.

14- Use of iron in manufacture of cooking utensils.

The iron will rust when exposed to moisture and air

15- Use of carbon dioxide gas to fill balloons.

The balloon will not float/will sink because carbon dioxide is denser than air

8

Answer the following:

- 1- New Zealand scientist won the Nobel Prize in Chemistry in 1908. **Ernest Rutherford**
- 2- Developed the first scientific theory about atoms **Dalton**
- 3- The building unit of matter **Atom**
- 4- Everything that has mass and volume and occupies a space **Matter**
- 5- Positively charged particles found inside the nucleus **Protons**
- 6- Particles whose mass can be neglected but whose charge is not. **Electrons**
- 7- Particles whose charge can be neglected but whose mass is not. **Neutrons**
- 8- Compounds used to improve agricultural production **NPK Fertilizers**
- 9- An element necessary for the greening of plant leaves **Nitrogen (N)**
- 10- An element necessary for strengthening plant roots **Phosphorus (P)**
- 11- An element necessary for healthy plant growth **Potassium (K)**
- 12- What are the most important attempts that have been made to classify elements?

Mendeleev's periodic table, Moseley's periodic table and The modern periodic table

13- What is the scientific basis for classifying elements in Mendeleev's periodic table?

Based on atomic mass

14- What is the scientific basis for classifying elements in Moseley's periodic table?

Based on atomic number

15- What is the scientific basis for classifying elements in the modern periodic table?

Based on atomic number and method of filling energy sublevels with electrons

How to distinguish between:

16- Elements of group (1A) and elements of group (7A) in terms of: Group name - the block which they belong to.

Group 1A (Group 1): Called Alkali metals, belong to s-block

Group 7A (Group 17): Called Halogens, belong to p-block

17- Group (2A) elements and Group (0) elements in terms of: Group name - the block which they belong to.

Group 2A (Group 2): Called Alkaline earth metals, belong to s-block

Group 0 (Group 18): Called Noble gases (Inert gases), belong to p-block

18- (Sand, iron filings) mixture, and sugar mixture in water in terms of: Separation methods.

Sand and iron filings mixture: Separated by magnetic separation

Sugar mixture in water: Separated by evaporation and condensation

19- Oxygen and water molecules in terms of: type of molecules.

Oxygen (O_2): Element molecule while Water (H_2O): Compound molecule

20- O_3 and C molecules in terms of: name - number of atoms that make up the molecule

O_3 : Name: Ozone Number of atoms: 3 atoms while C: Name: Carbon Number of atoms: 1

21- Water and honey in terms of: viscosity.

Water: Low viscosity while honey: High viscosity

22- Cork and iron in terms of: density.

Cork: Low density while Iron: High density

23- Toothpaste and lemon in terms of: effect on litmus paper leaves.

Toothpaste: turns red litmus paper blue while Lemon: turns blue litmus paper red

24- Butter mold and aerogel in terms of: melting point.

Butter: Low melting point while Aerogel: Very high melting point

9

Define the following (what is meant by)

Matter	Everything that has mass and volume (occupies space).
Atom	It is the building and structural unit of all matter.
Fertilizers	They are chemical compounds used to improve agricultural production.
Isotopes	They are different forms of atoms of the same element that have the same atomic number but differ in mass number.
Atomic number	The number of positive protons in the nucleus of an atom of an element.
Mass number	The sum of the numbers of protons and neutrons in the nucleus of an atom of an element.
Mendeleev's periodic table	• A table in which the elements are arranged in ascending order according to their atomic masses. • The first true periodic table for classifying the elements.
Moseley's periodic table	A table in which the elements are arranged in ascending order according to their atomic numbers.
Modern periodic table	A table in which the elements are arranged in ascending order according to their atomic numbers and the method in which the sub-energy levels are filled with electrons.
Metals	Elements whose electron configuration ends mostly with 1, 2, or 3 electrons.
Non-metals	Elements whose electron configuration ends mostly with 5, 6, or 7 electrons.
Semi-metals (Metalloids)	Elements located in the p-block and can't be identified from their electron configuration.
Noble gases	Elements of group zero (0) whose electron configuration ends with 8 electrons (except helium).
Valence electrons	Electrons found in the outermost energy level of the element atom.
Lewis structure	The dot representation of valence electrons around the element's symbol.
Valence of the element	The number of unpaired electrons in the Lewis structure of the element.
Pure substances.	They are substances whose components cannot be separated by physical methods.

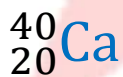
Compounds.	It is a pure substance formed as a result of the chemical combination between two or more elements in fixed mass ratios.
Elements	It is the simplest form of matter that cannot be decomposed (dissociated) into simpler forms either by physical or chemical methods.
Mixtures.	They are substances composed of two or more materials, that are not chemically combined and their components can be separated by physical methods.
Boiling point	It is the temperature at which a substance starts to change from a liquid state to a gas state.
Melting point	It is the temperature at which a substance starts to change from a solid state to a liquid state.
Homogeneous mixtures.	It is a mixture whose components cannot be distinguished by the naked eye.
Heterogeneous mixtures.	It is a mixture whose components can be distinguished by the naked eye.
Molecular formula	It is a symbolic formula that expresses the type and number of atoms of the elements that form the molecule.
Physical properties	They are properties of substance that can be observed and measured in some cases.
Chemical properties	They are the properties of the substance that only appear when a chemical reaction occurs, leading to a change in the shape and composition of the substance.
Organic compounds	They are compounds in which carbon atoms are bonded to hydrogen atoms and may also be bonded to other atoms such as oxygen and nitrogen.
Inorganic compounds	They are compounds that contain various elements and carbon may be one of them.
Viscosity	It is a physical property of liquids that describes their resistance to flow and the movement of objects through them.
Density	It is a physical property used to distinguish between materials that float on the surface of water and those that sink in water.

Aerogel	It is a transparent low-density material which air makes up 99.8% of its composition.
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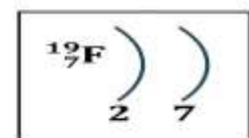
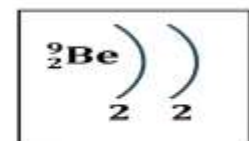
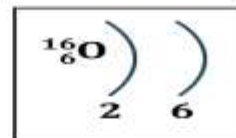
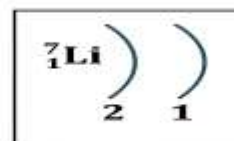
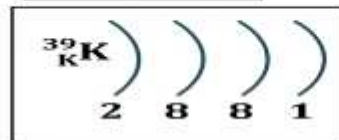
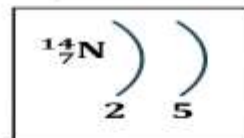
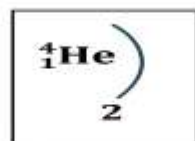
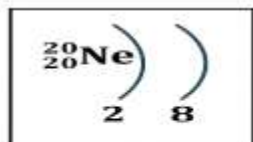
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Various questions

1- Draw the electronic configuration of the atoms of the following elements:



الإجابة



2- Answer this questions

C) If you know that the atomic number of sodium is 11 and its mass number is 23 find: the number of electrons, the number of protons and the number of neutrons?

number of electrons=number of protons=atomic number=11

number of neutrons= mass number-atomic number =23-11= 12neutrons

D) An element has a mass number of 35 and 18 neutrons in its nucleus

Calculate: the number of protons

number of protons=mass number- neutrons =35-18=17 protons

3- Element (X) has 13 protons and the number of its neutron is increased by one more than its proton Find:

- 1- Number of electrons =protons= $13e^-$ 2- Number of neutrons= $13+1=14n$
 3- Number of electrons in the last energy level= $3e^-$

4- Element (Y) has electrons distributed in two energy levels, with its last energy level containing 4 electrons and its nucleus containing 6 neutrons.

1- Draw the electronic configuration of the element. $K=2, L=4$

2- Find the mass number

Electrons =atomic number= $2+4=6e^-$ /mass number=atomic number
 +neutrons= $6+6=12$

3- Write the symbol for this element, explaining the numbers for A and Z

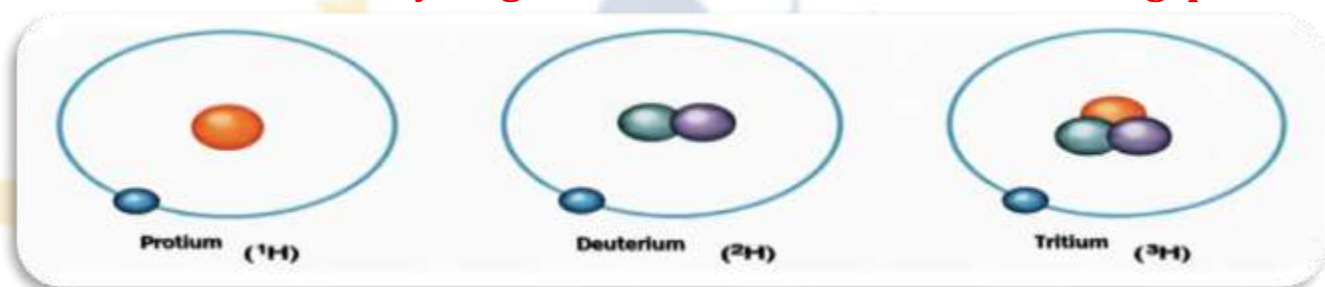
$A=\text{mass number} =12 / Z=\text{atomic number}=6$

5- Write the symbols of the following elements:

1. Zinc 2. Potassium 3. Silicon 4. Gold 5. Silver
 6. Copper 7. Phosphorus 8. Lead 9. Mercury 10. Chromium

1-Zn /2-K/3-Si/4-Au /5-Ag/6-Cu/7-P/8-Pb/9-Hg/10-Cr

6- Study the opposite figure carefully, which represents the electronic distribution of a hydrogen atom, then answer the following questions:



4- What are the three figure represent?
 three isotopes of hydrogen: Protium (^1H), Deuterium (^2H), and Tritium (^3H).

5- What is the differences between them?

the differences are the number of neutrons in the nucleus: Protium (^1H): 0 neutrons

Deuterium (^2H): 1 neutron/Tritium (^3H): 2 neutrons

6- What are the similarities between them?

The atomic number

7- Write the mass number for each isotope of hydrogen? and and

Protium: Mass number = 1 (1 proton + 0 neutrons)

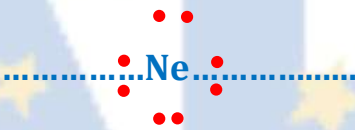
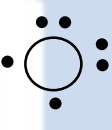
Deuterium: Mass number = 2 (1 proton + 1 neutron)

Tritium: Mass number = 3 (1 proton + 2 neutrons)

7- Complete the following table:

Group number	Zero	7A	2A	1A
Group name	Nobel gases	halogens	Alkaline earth	Alkali metals

8- complete the following table:

The element	Ne ₁₀	O ₈	Li ₃
Electron configuration	K=2 L=8	K=2 L=6	K=2,L=1
Lewis structure			
Valency	zero	divalent	Monovalent

9- What are the results of increasing the atomic number of each of the following:

1- Alkaline earth elements "in terms of chemical activity"

The chemical activity increases as the atomic number increases

2- Halogen elements "in terms of melting and boiling points"

The melting and boiling points increase as the atomic number increases

3- Group 1 elements "in terms of atomic radius"

The atomic radius increases as the atomic number increases

10-Arrange the following: (from right to left in the modern periodic table)

Transition element-semi-metal - inert gas - strong metal - non-metal

- Inert gas (noble gas)
- Non-metal
- Semi-metal (metalloid)
- Transition element
- Strong metal -

11-Identify the location of the following elements in the modern periodic table:

1- ${}^2\text{He}$

2- ${}^9\text{F}$

3- ${}^{14}\text{Si}$

1- ${}^2\text{He}$ =Period: 1 /Group: 18 (Group 0 - Noble gases) /Block: s-block

2- ${}^9\text{F}$ =Period: 2/Group: 17 (Group 7A - Halogens)/Block: p-block ${}^4\text{Si}$

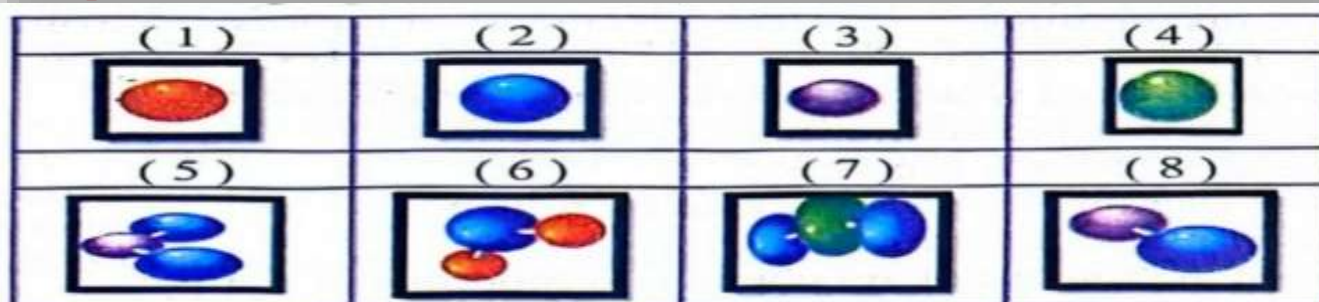
3- =Period: 3/Group: 14 (Group 4A)/Block: p-block

12-State the number indicating each of the following:

- 1- The number of elements in the modern periodic table **118 elements**
- 2- The number of elements in the first period **2 elements**
- 3- The number of elements in the third period **8 elements**
- 4- The number of blocks in the modern periodic table **4 blocks**
- 5- The number of groups in block d **10 groups**
- 6- Number of groups in block p **6 groups**
- 7- Number of groups in the modern periodic table **18 groups**
- 8- Number of energy levels filled with electrons in a helium atom **2 (1 energy level)**
- 9- Group number of the element sulfur **16 Group 16 (Group 6A)**
- 10- Number of single electrons in the outer energy level of a potassium atom **19 one electron**
- 11- Atomic number of an element in the third period, group 5. **=15**
- 12- Atomic number of an alkali metal in the third period **=11**
- 13- Valency of a halogen element. **monovalent**
- 14- The atomic number of a monovalent metal **Any alkali metal Li=3 or Na=11 or K=19**
- 15- The atomic number of a divalent nonmetal element is in the third period. **=16**
- 16- The atomic number of an element is at the beginning of the third period. **=11**
- 17- The atomic number of an element at the end of the second period **=10**
- 18- The atomic number of an element at the end of the p block and in the third period **=18**

13-Calculate the atomic number for each of the following:

- 1- An element located in the second period and the fifth group. **=7**
- 2- A divalent metallic element located in the second period. **=4**
- 3- A divalent non-metallic element located in the second period. **=8**
- 4- An element located at the beginning of the second period. **=3**
- 5- An element located at the end of the third period. **=18**
- 6- An element from the alkali metals located in the fourth period. **=19**
- 7- An element from the noble gases located in the first period. **=2**
- 8- An element from the alkaline earth metals located in the third period. **=12**
- 9- The last energy level M has the same number of electrons as level K **=12**

14-Observe the following figures carefully and answer the following questions:

Complete the following sentences:

- 15- Figure No.7.....represents a carbon dioxide molecule, while Figure No.5.... represents a water molecule.
- 16- Figure No. ...2.... represents an oxygen atom, while Figure No.3..... represents a carbon atom.
- 17- Figure No. ...1.. represents a hydrogen atom, while Figure No. ...4.... represents a sulfur atom.
- 18-The shape number6..represents a sulfur dioxide molecule, while the shape number.....8..... represents a carbon monoxide molecule.

19-Give one example for each of the following:

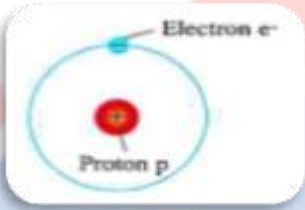
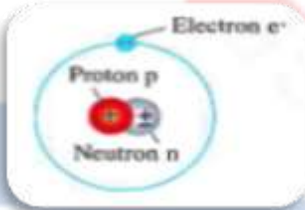
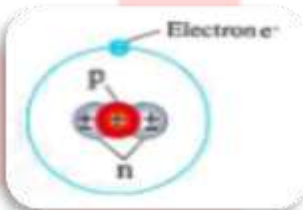
- 1- Organic compound molecule **Methane (CH₄)**
- 2- Element molecule consisting of a single atom **Helium (He)**
- 3- Physical property used to distinguish between materials **Density**
- 4- Chemical property used to distinguish between materials **change the color of litmus paper**
- 5- Alloy made of iron with added materials resistant to rust. **Stainless steel alloy**
- 6- An alloy used in aircraft manufacturing **Aluminum-titanium alloy**
- 7- A low-density transparent material with 99.8% air content **Aerogel**
- 8- A compound used to color house facades, papyrus, and statues. **Egyptian blue dye**
- 10- A substance that regulates calcium and phosphorus levels in the blood. **Vitamin D**

11**Compare between:****1- Protons, neutrons, and electrons in terms of:**

Type of charge /Location /Mass

	proton	Neutron	Electron
Symbol	p	n	e –
Relative electric charge	+1	0	-1
Position in the atom	Found inside the nucleus	Found inside the nucleus	Revolves around the nucleus in energy levels
Mass	1 u	1 u	$\frac{1}{1836} u$

2- The three isotopes of hydrogen in terms of:**a-Name of isotope****b- Number of neutrons****c - Mass number****d-Symbol**

	${}^1_1\text{H}$	${}^2_1\text{H}$	${}^3_1\text{H}$
Isotope name	Protium	Deuterium	Tritium
Structure (components) of the isotope atom			
Atomic number (Z)	1	1	1
Mass number (A) (Number of nucleons)	1	2	3
Number of protons (p)	1	1	1
Number of neutrons (n)	0	1	2

3- S-block elements and P-block elements in terms of:**Number of groups /Their location in the periodic table**

	s-block	p-block
Position	The left side of the modern periodic table	The right side of the modern periodic table
Number of groups	It consists of two groups 1A, 2A	It consists of 6 groups 3A : 0
Types of elements	All of its elements are metals, except hydrogen	It includes elements from metals, nonmetals, metalloids, and inert gases

4- Group 1A, 2A, 7A and zero**Name-block-position-example -type**

	Group (1) 1A	Group (1) 1A	Group (1) 1A	Group (1) 1A
Group name	Alkali metals	Alkaline earth metals	Halogens	Noble gases
The block of the elements	s	s	p	p

Position	The far left of the modern periodic table	The left side of the modern periodic table	The right side of the modern periodic table	The far right of the modern periodic table
The number of electrons in the outermost energy level	1 electron	2 electrons	7 electrons	8 electrons except helium 2 electrons
Example	- Lithium - Sodium	- Magnesium - Calcium	- Fluorine - Chlorine	- Helium - Neon
Type of its elements	All of them are metals except hydrogen	All of them are metals	All of them are nonmetals	All of them are inert gases

5- Metals and non-metals in terms of:

Physical state/Their location in the periodic table/Number of electrons in the last energy level

	Metals	Nonmetals
Number of electrons in the outermost energy level	(1 , 2 , 3) electron(s)	(1 , 2 , 3) electrons
The block that they include	(s , p , d , f)	p
The physical state	All of them are solid, except mercury which is a liquid	Solid, liquid, or gas

6- Homogeneous mixture and heterogeneous mixture. In terms of:

Definition- Examples- Methods of Separation

	Homogeneous mixture	Heterogeneous mixture
Definition	A mixture whose components cannot be distinguished by the naked eye.	A mixture whose components can be distinguished by the naked eye.
Examples	Sodium chloride solution.	Mixture of sand and water.
Methods of Separation	Evaporation and condensation.	Filtration.

7- Sugar in water mixture and sand in water mixture In terms of: separation method

	Sugar in water mixture	Sand in water mixture
Separation method	Evaporation and condensation.	Filtration.

8- Organic compounds molecules and inorganic compounds molecules in terms of:

Composition- Examples

	Organic compounds molecules	Inorganic compounds molecules
Composition	They consist of bonding of carbon atoms with hydrogen atoms, and may also bond with other atoms such as oxygen and nitrogen.	They consist of bonding of various elements. carbon may be one of them.
Examples	Methane molecule CH_4	Nitric acid molecule HNO_3

9- Nitric oxide NO and magnesium carbonate $MgCO_3$ In terms of: number of elements - number of atoms

	Nitric oxide NO	Magnesium carbonate $MgCO_3$
Number of elements	2	3
Number of atoms	2	5

10- Helium gas and nitrogen gas In terms of: properties - usage

	Helium gas	Nitrogen gas
Properties	Lower density than air and non-flammable.	Does not react with rubber and is not affected by changes in temperature.
Usage	Filling balloons	Filling car tires

حمل الآن

مجاناً وحصرياً

المراجعة رقم (4)

اختبار شهر اكتوبر





October Revision

Mr. Ahmed Elbasha

★ (1) Write the scientific term:

- 1) Everything that has mass and volume or occupies space. (.....)
- 2) The building and structural unit of all matter. (.....)
- 3) Positively charged particles found inside the nucleus of an atom. (.....)
- 4) A subatomic particles whose charge can be neglected but whose mass cannot be neglected (.....)
- 5) Negatively charged particles with a very small mass that revolve around the nucleus in energy levels. (.....)
- 6) Chemical compounds used in improving agricultural production. (.....)
- 7) The total number of protons and neutrons that make up the nucleus of an atom. (.....)
- 8) Imaginary areas in which electrons revolve around the nucleus, each according to its energy. (.....)
- 9) Different forms of atoms of the same element have the same atomic number but differ in their mass numbers. (.....)
- 10) One of the subatomic particles whose charge is equal to that of an electron in amount but opposite in type. (.....)
- 11) Elements of group 7A in the modern periodic table. (.....)
- 12) A scientist who arranged the elements in his table in ascending order according to their atomic masses. (.....)
- 13) A scientist who added the zero group to Mendeleev's periodic table. (.....)

- 14) The only liquid metal in the modern periodic table. (.....)
-
- 15) Mixtures whose components can be distinguished by the naked eye (.....)
-
- 16) Substances composed of two or more substances that are not chemically combined and their components can be separated by physical methods. (.....)
-
- 17) Substances whose components cannot be separated by physical methods. (.....)
-
- 18) The simplest pure form of matter that cannot be decomposed into simpler forms either by physical or chemical methods. (.....)
-
- 19) A molecule composed of different atoms of different elements. (.....)
-
- 20) A symbolic formula that expresses the type and number of atoms of elements that form the molecule. (.....)
-
- 21) Properties of a substance that can be observed and measured. (.....)
-
- 22) physical property of liquids that expresses their resistance to flow and movement of objects through them. (.....)
-
- 23) The temperature at which a substance starts to change from a solid state to a liquid state. (.....)
-
- 24) A transparent, low-density material, in which air makes up 99.8% of its composition (.....)

***(2) Choose the right answer:**

1. The building and structural unit of all matter is
a. clay brick b. molecule c. the atom d. the cell
2. The scientist who proposed the first scientific theory about the atom is
a. Rutherford b. Dalton c. Mosele. d. Mendeleev
3. The subatomic particles that make up the nucleus of atom are
a. protons and electrons b. neutrons and electrons
c. protons and neutrons d. protons, neutrons and electrons
4. An element whose outermost energy level (L) has 6 electrons, its atomic number is
a. 8 b. 9 c. 10 d. 11
5. Which of the following subatomic components has a mass of 1 u ?
a. Proton only. b. Electron only.
c. Each of neutron and electron. d. Each of neutron and proton.
6. Which of the following atoms has number of neutrons equals twice the number of protons in it's nucleus ?
a. ${}^1_1\text{H}$ b. ${}^3_1\text{H}$ c. ${}^4_2\text{He}$ d. ${}^7_2\text{He}$
7. The electrons of an atom of an element are distributed in 3 energy levels, and the outermost energy level contains 3 electrons, while its nucleus contains 14 neutrons, its mass number is
a. 3 b. 13 c. 14 d. 27
8. All of the following are matter, except
a. air. b. light. c. sand. d. table salt.
9. The mass of a proton is equal to
a. 1 g. b. 1 kg. c. 1 u. d. 1 mg.
10. The chemical symbol of the element Sulphur is
a. Si b. S c. K d. Ca
11. Which of the following shows the correct element and its symbol ?
a. Sodium S b. Phosphorus F c. Magnesium Mg d. Potassium B
12. is the element that makes plant roots stronger.
a. N b. K c. P d. O

13. Some fertilizers contain element which is necessary for making plant leaves green.

- a. carbon b. phosphorus c. nitrogen d. sulphur

14. The number of negatively charged particles in an aluminum atom $^{27}_{13}\text{Al}$ is

- a. 13 b. 14 c. 20 d. 27

15. The number of nucleons in the nucleus of the element ^7_3X is

- a. 3 b. 4 c. 7 d. 10

16. The energy level L in the silicon atom $^{14}_{14}\text{Si}$ contains

- a. $2e^-$ b. $3e^-$ c. $8e^-$ d. $18e^-$

17. An element containing 3 electrons in its outermost energy level M has an atomic number of

- a. 3 b. 5 c. 13 d. 15

18. The isotopes of an element are identical in all of the following, except

- a. atomic number b. number of protons.
c. number of neutrons. d. number of electrons.

19. The ratio between the mass of a proton and the mass of a neutron is one

- a. equal to b. less than c. greater than d. half

20. When an oxygen atom $^{16}_8\text{O}$ is converted into an ion, the number of nucleons.....

- a. decreases by 2 b. increases by 2 c. remains 16 d. remains 8

21. The bond in which each atom shares a single valence electron is called bond

- a. ionic b. single covalent
c. double covalent. d. triple covalent

22. The bond in molecule is a triple covalent bond.

- a. hydrogen b. nitrogen c. oxygen d. water

23. A monovalent nonmetal element located in the second period is in the block

- a. s b. p c. d d. f

24. Silicon and germanium are elements of the block.

- a. d b. s c. f d. p

25. The outermost energy level of alkali elements atoms contains electron (s).

- a. zero b. 1 c. 2 d. 3

26. The Lewis dot structure shows 4 unpaired electrons in the atom of

- a. ^4_4Be b. ^8_8O c. $^{14}_{14}\text{Si}$ d. $^{16}_{16}\text{S}$

27. An element of inert gases whose outermost energy level in its atom is L has an atomic number of

- a. 2 b. 8 c. 10 d. 18

28. The alkali earth metals are located in the of the periodic table.

- a. left b. right c. middle d. bottom

29. The zero group in the modern periodic table belongs to block.

- a. s b. p c. d d. f

30. The zero group includes

- a. metals. b. liquid nonmetals. c. metalloids. d. inert gases.

31. is a solid halogen.

- a. Fluorine b. Chlorine c. Bromine d. Iodine

32. All periods of the modern periodic table end with

- a. transitional elements. b. inert elements.
c. alkaline elements. d. alkaline earth elements.

33. Lanthanides belong to block.

- a. s b. p c. d d. f

34. If the outermost energy level of a halogen atom is level L, its atomic number is

- a. 7 b. 9 c. 17 d. 19

35. The valency of iodine is

- a. trivalent. b. divalent. c. monovalent. d. zero.

36. The valency of argon is

- a. 0 b. 1 c. 6 d. 8

37. Element (X) is one of the alkaline earth elements and is located in the second period, its atomic number is

- a. 4 b. 7 c. 5 d. 8

38. All of the following elements are metalloids, except

- a. silicon. b. sulphur. c. boron. d. arsenic.

39. All of the following are inorganic compounds, except

- a. blood hemoglobin. b. carbon dioxide gas. c. nitric acid. d. water.

40. A mixture of sand and iron filings can be separated by

- a. filtration. b. magnetic separation.
c. heating. d. electrolysis.

41. The number of atoms in a Sulphuric acid molecule H_2SO_4 is equal to

- a. a b. 7 c. 6 d. 5

42. All of the following substances have corrected formulas, except

- a. Egyptian blue dye: $\text{CaCuSi}_4\text{O}_{10}$ b. methane: CH_3
c. nitric acid: HNO_3 d. ozone: O_3

43. All of the following are physical properties of a piece of calcium carbonate, except that it

- a. is solid b. doesn't dissolve in water.
c. is white in color. d. produces gas bubbles with vinegar

44. The solution of sugar and water is a mixture, whose components

- a. heterogeneous, can be distinguished b. homogeneous, can be distinguished
c. homogeneous, cannot be distinguished

45. When table salt and sand are stirred together in water, a is formed.

- a. heterogeneous mixture b. solution
c. homogeneous mixture d. compound

46. All of the following gases molecules are monatomic, except

- a. helium molecule. b. argon molecule.
c. oxygen molecule. d. neon molecule.

47. What is the number of elements involved in the composition of MgCO_3 ?

- a. 2 b. 3 c. 4 d. 5

48. Vitamin D regulates the level of in the blood.

- a. Mg b. Ca c. Cl d. Na

49. Balloons can be filled with

- a. oxygen. b. nitrogen. c. chlorine. d. helium.

50. Which of the following cannot be separated into its components by physical or chemical methods?

- a. Calcium. b. Water.
c. Table salt in water. d. Mercury oxide.

51. Which of the following represents both the formula and number of elements in nitric acid molecule?

- a. HNO_3 consists of three elements. b. HNO_3 consists of five elements.
c. HNO_2 consists of four elements. d. HNO_2 consists of six elements.

★(3) Complete the following :

1. The atom is charged in its normal state, while the nucleus is charged.
2. The electrons revolve around at extremely high speeds in areas known as
3. Protons are particles with electric charge, while electrons are particles with electric charge.
4. Neutrons are particles with electric charge and are found inside of the atom.
5. Both protons and neutrons equal in
6. The chemical symbol of phosphorus is, while the chemical symbol of mercury is
7. The chemical symbol of element is Cu, while the chemical symbol of element is Fe
8. The atom does not have neutrons when is equal to
9. Energy level L can be saturated with electrons, while energy level N can be saturated with electrons.
10. Transition elements start appearing in the modern periodic table in period and they belong to block.
11. The elements of group 1A are known as, while those of group 7A are known as
12. Valency of an element in group 7A is and the number of unpaired electrons in its outermost energy level is equal
13. Nitrogen element ${}^7\text{N}$ is located in period and group
14. The elements of alkali metals belong to the block, while the halogens belong to the block.
15. Lewis's model for the atom of fluorine ${}^9\text{F}$ includes unpaired electron, so its valency is
16. The element atom whose L energy level contains 6 electrons is located in period and group
17. Valency of alkali metals elements is while the valency of alkaline earth metals elements is

18. The element located in period 2, group 2A, its atomic number is and belongs to the block.
19. As the atomic number of group 7A elements increases, the atomic radius and the melting and boiling points
20. An element from the alkali metals is in period 3 and has an atomic number of, and another element from the halogens in the same period has an atomic number of.....
21. Element ${}^{39}_{19}\text{K}$ is in period and group
22. The elements of the block are located at the bottom of the periodic table while the elements of block are located in the middle of the table.
23. Oxygen molecule O_2 is an example of molecules, while methane molecules (CH_4) is an example of molecules.
24. Helium gas is used to fill, while nitrogen gas is used to fill
25. Air enters the composition of aerogel at a percentage of % , so it is considered a substance with density.
26. When red mercury oxide is heated, it is decomposed into a liquid and an diatomic gas.
27. Vitamin regulates the levels of calcium and in the blood.
28. Mixtures are classified into mixtures and mixtures.
29. molecules are composed of identical atoms, while molecules are composed of different atoms.
30. The molecule of methane consists of two elements which are and
31. Melting point is a property, while the formation of colored precipitate according to the type of reagent is a property.
32. enters the composition of aerogel at a percentage 99.8%.

✱(4) Correct the underlined words:

1	The chemical symbol of magnesium is <u>MG</u> .	(.....)
2	The number of nucleons in the nucleus of the element $^{27}_{13}\text{X}$ equals <u>143</u> .	(.....)
3	The number of energy levels in the heaviest atoms is <u>9</u> levels.	(.....)
4	The number of energy levels for a negative ion is <u>greater than</u> the number of energy levels for its atom.	(.....)
5	<u>Water</u> molecule is considered the simplest molecule of an organic compound.	(.....)
6	<u>Neon</u> is the only liquid metal in the periodic table	(.....)
7	The elements of d-block are known as <u>the noble</u> elements.	(.....)
8	In Mendeleev's periodic table elements were arranged according to their <u>atomic numbers</u> .	(.....)
9	Mendeleev discovered that the properties of elements repeated periodically at the beginning of each <u>sublevel</u> .	(.....)
10	The melting point of lithium is <u>equal to</u> the melting point of sodium.	(.....)
11	The elements of group 7A are called the <u>alkali</u> .	(.....)
12	The number of elements in the modern periodic table is <u>92 elements</u> .	(.....)
13	The elements of group 1A are similar to the elements of group <u>5A</u> in valency.	(.....)
14	The Lewis dot structure of the oxygen atom ${}_8\text{O}$ contains <u>six</u> individual electrons.	(.....)
15	Melting point and boiling point of halogens <u>decrease</u> by increasing atomic number.	(.....)
16	A mixture of iron filings and Sulphur can be separated by <u>filtration</u> .	(.....)
17	Pure substances are divided into <u>solutions</u> and compounds.	(.....)
18	Carbon dioxide is an <u>organic</u> compound.	(.....)
19	The molecular formula of nitric acid is <u>HNO₂</u>	(.....)
20	<u>Silicon</u> is an inert gas with a less density than the density of air and it is non-flammable.	(.....)
21	<u>Helium</u> gas is used in filling car tires.	(.....)
22	molecule of magnesium carbonate (MgCO_3) consists of <u>four</u> atoms and <u>five</u> elements.	(.....)
23	<u>Voltmeter</u> device is used in the electrolysis of water.	(.....)
24	<u>A compound</u> cannot be decomposed into simpler forms.	(.....)

✱(5) **Choose the odd word out:**

- | | |
|--|-----------|
| 1. Protons / Neutrons / Electrons / Quantum. | (.....) |
| 2. Protium / Thorium / Deuterium / Tritium. | (.....) |
| 3. Boron/ Silicon/ Bromine/ Germanium. | (.....) |
| 4. Fluorine/ Chlorine/ Iodine/ Magnesium. | (.....) |
| 5. ^{12}Mg / ^{6}C / ^3Li / ^{11}Na | (.....) |
| 6. s / p / o / d / f | (.....) |
| 7. Krypton/ Xenon/ Nitrogen/ Radon. | (.....) |
| 8. Helium/ Argon/ Neon/ Hydrogen. | (.....) |
| 9. Melting point/ Solubility in water/ Rusting/ Density. | (.....) |
| 10. Plastic polymers/ Blood hemoglobin/ Methane/ Nitric acid | (.....) |
| 11. HCl / CH_4 / HNO_3 / H_2O | (.....) |

✱(6) **Put ($\sqrt{\quad}$) or (X) :**

- | | |
|--|-----|
| 1. The first energy level K is saturated with 5 electrons. | () |
| 2. The energy of level N is less than the energy of level M | () |
| 3. The charge of a proton is equal to the charge of an electron in quantity and type. | () |
| 4. Protons are the smallest subatomic components in terms of mass. | () |
| 5. The atomic number is written above the left side of the symbol of the element. | () |
| 6. Electrons revolve inside the nucleus in energy levels. | () |
| 7. The energy of the level increases as it gets closer to the nucleus. | () |
| 8. The higher energy levels are filled with electrons first. | () |
| 9. The aqueous solutions of ionic compounds conduct electricity. | () |
| 10. Ionic bond results in compound molecules only. | () |
| 11. Melting point of covalent compounds is high. | () |
| 12. The number of elements known so far is 118. | () |
| 13. The modern periodic table consists of 9 horizontal periods and 13 vertical groups. | () |
| 14. Elements ^4X , ^{12}Y , ^{20}Z are located in the same period. | () |
| 15. The viscosity of water is less than that of honey, so it is more difficult to stir water than honey. | () |
| 16. Distinguishing between two different solutions by adding a reagent to each of them is a physical change. | () |
| 17. Stirring both table salt and sand in water gives a homogeneous mixture. | () |
| 18. The melting of ice is a Physical change. | () |
| 19. The density of cork is less than that of water, so it floats on its surface. | () |
| 20. Aerogel is characterized by high density. | () |

***(7) Give reasons for each of the following :**

1. Protium, deuterium and tritium are isotopes of one element.

.....

2. The nucleus of an atom is positively charged.

.....

The mass of an atom is concentrated in the nucleus.

.....

3. In an atom, the mass number is usually greater than the atomic number.

Sodium $_{11}\text{Na}$ is an alkali metal.

.....

4. Halogens are monovalent nonmetals.

.....

5. The solution of sugar and water is considered as a homogeneous mixture.

.....

6. Wood floats on water surface, while metallic coins sink in water.

.....

7. Aerogel is used in the manufacture of jackets for researchers in Antarctica.

.....

8. Iron filings can be easily separated from flour.

.....

9. Table salt solution is a homogeneous mixture, while sand mixed with water is a heterogeneous mixture.

.....

10. Organic compounds are known as carbon compounds.

.....

11. It is easier to stir water than honey.

.....

12. Cork floats on water surface, while iron sinks in water.

.....

13. Helium gas is used in filling balloons.

.....

14. Nitrogen is used in filling car tires instead of air.

.....

15. Aluminum - Titanium alloy has a great importance

.....

***(8) What are the results of the following :**

1. The number of positive protons inside the nucleus is equal to the number of negative electrons revolving around it.

.....

2. Excessive use of fertilizers.

.....

3. The absence of neutrons in the nucleus. of the protium atom.

.....

4. Adding table salt to water.

.....

5. Adding sand to water.

.....

6. Heating red mercury oxide compound.

.....

7. Electrolyzing acidified water.

.....

8. Placing a piece of cork and an iron nail in water.

.....

9. Immersing a litmus paper in lemon juice.

.....

(9) Problems:*1 State the number which indicates each of the following:**

1. Neutron mass.
2. The number of electrons that can fill the energy level M
3. The number of elements in the modern periodic table so far.
4. The number of periods in the modern periodic table.
5. The number of groups in the modern periodic table.
6. The number of blocks in the modern periodic table.
7. The number of occupied energy levels with electrons in the atom of calcium element $_{20}\text{Ca}$

2 Illustrate with diagrams the electron configuration of the following atoms, with identifying: • Number of protons. • Number of neutrons

1. ^7_3Li
2. $^{14}_7\text{N}$
3. $^{16}_8\text{O}$
4. $^{20}_{10}\text{Ne}$
5. $^{24}_{12}\text{Mg}$

3 The carbon atom contains 6 positively charged protons and 6 negatively charged electrons. What can be concluded from the previous statement.

.....

.....

.....

4 Illustrate with diagrams the electron configuration of the atoms ${}_{10}^{20}\text{Ne}$, ${}_{11}^{23}\text{Na}$ then identify the following for each atom :

- (1) The number of neutrons.
- (2) The number of energy levels occupied with electrons.
- (3) The number of electrons in the outermost energy level.
- (4) The symbol of the outermost energy level.

.....

.....

.....

.....

.....

.....

5 Determine the location of each of the following elements In the modern periodic table, and state their valencies :

1. ${}_{7}\text{N}$
2. ${}_{16}\text{S}$
3. ${}_{9}\text{F}$
4. ${}_{19}\text{K}$
5. ${}_{2}\text{He}$

6 What is the atomic number of each of the following elements :

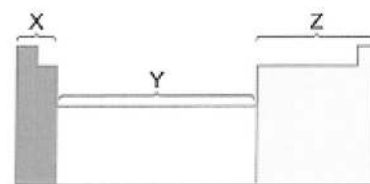
1. An element that is located in period 2 , group 6A
2. An element that is located in period 3 , group zero.
3. An element that is located in period 1 , group zero.
4. An element that is located in period 3 , group 4A

7 Study the following figures, then answer the questions:

The opposite figure: represents a section in the modern periodic table:

(1) What are the names of the element blocks indicated by the letters (X), (Y) and (Z) ?

(2) How many groups are in each block ?

**8 The opposite figure represents one of the groups of the modern periodic table:**

(1) What is the name of this group ? What is the valency of any of its elements ?

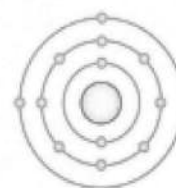
(2) Which block does this group belong to ?

X
Y
11
Z
L
M

9 The opposite figure shows the electron configuration of element (X): Determine:

1. The location of the element in the modern periodic table.

2. The block to which the element belongs.

**10 Classify the following materials into two groups, elements and compounds.**

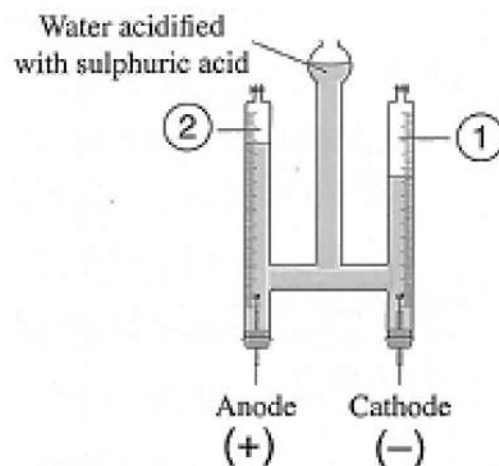
Al	CO ₂	N ₂	H ₂ SO ₄
SiO ₂	Cu	NH ₃	O ₃

11 From the opposite figure:

(1) What is the name of the device shown in the figure?

What is its use?

(2) Write the items indicated by the numbers (1) , (2)



12 Determine the number of each of the atoms and the elements in the following molecules:

1. Oxygen molecule O_2
2. Ozone molecule O_3
3. Methane molecule CH_4
4. Nitric acid molecule HNO_3
5. Sodium hydroxide molecule $NaOH$
6. Magnesium sulphate molecule $MgSO_4$
7. Phosphoric acid molecule H_3PO_4

Model Answer

*(1) Write the scientific term:

1. Matter	8. Energy levels	15. Heterogenous	21. Physical properties
2. Atom	9. Isotopes	16. Mixture	22. Viscosity
3. Proton	10. Proton	17. Compound	23. Melting point
4. Neutrons	11. Halogen	18. Element	24. Aerogel
5. Electrons	12. Mosely	19. Compound	
6. Fertilizers	13. Mosely	20. Chemical formula	
7. Mass number	14. Mercury		

*(2) Choose the right answer:

1. C	8. B	15. C	22. B	29. B	36. A	43. D	50. A
2. B	9. C	16. C	23. B	30. D	37. A	44. C	51. A
3. C	10. B	17. C	24. D	31. D	38. B	45. A	
4. A	11. C	18. C	25. B	32. B	39. A	46. C	
5. D	12. C	19. A	26. C	33. D	40. B	47. B	
6. B	13. C	20. C	27. C	34. B	41. B	48. B	
7. D	14. A	21. B	28. A	35. C	42. B	49. D	

*(3) Complete the following:

1. Neutral – positive	9. 8 – 32	18. 4 – s	27. D – phosphorus
2. Nucleus – energy levels	10. 4 – d	19. Increase – increase	28. Homogeneous – heterogeneous
3. Positive – negative	11. Alkali metal – Halogen	20. 11 – 17	29. Elements – compound
4. Neutral – nucleus	12. Monovalent – one	21. 4 – 1A	30. Carbon and hydrogen
5. Mass	13. 2 – 5A	22. F – d	31. Physical – chemical
6. P – Hg	14. S – P	23. Element – compound	32. Aerogel
7. Copper – iron	15. One – monovalent	24. Ballons – car tires	
8. Mass number – atomic number	16. 2 – 6A	25. 99.8% – low	
	17. Monovalent – divalent	26. Mercury – oxygen	

*(4) Correct the underlined words:

1. Mg	8. Mass number	15. Increase	21. Nitrogen
2. 27	9. Period	16. Magnetic attraction	22. 5 – 3
3. 7	10. Less than	17. Element	23. Hoffmann voltmeter
4. Equal	11. Halogen	18. Inorganic	24. Element
5. Methane	12. 118	19. HNO ₃	
6. Mercury	13. 7A	20. Helium	
7. Transition	14. Two		

*(5) Choose the odd word out:

1. Quantum	5. ⁶ C	9. Rusting
2. Thorium	6. O	10. Nitric acid
3. Bromine	7. Nitrogen	11. CH ₄
4. Magnesium	8. Hydrogen	

*(6) Put (√) or (X) :

1. (X)	5. (X)	9. (√)	13. (X)	17. (X)
2. (X)	6. (X)	10. (√)	14. (X)	18. (√)
3. (X)	7. (X)	11. (X)	15. (X)	19. (√)
4. (X)	8. (X)	12. (√)	16. (X)	20. (X)

***(7) Give reasons for each of the following :**

1. Because they have the same atomic number, but they differ in their mass numbers.
2. Because it contains positively charged protons and electrically neutral neutrons.
3. Because the mass of electrons is negligible compared to that of both the protons and neutrons found inside the nucleus.
4. Because the mass number equals the sum of the numbers of protons and neutrons in the nucleus of the atom, while the atomic number equals the number of protons only.
5. Because its outermost energy level contains one electron.
6. Because the Lewis structure for the atoms of their elements contains one unpaired electron.
7. Because the components of the solution cannot be distinguished by the naked eye.
8. Because the density of wood is less than that of water, while the density of coins is greater than that of water.
9. Because it is the lightest known solid material and it is characterized by highly durable and has an excellent insulating properties.
10. Because iron filing is attracted to magnet.
11. Because the components of the table salt solution cannot be distinguished by the naked eye, while the components of sand and water mixture can be distinguished by the naked eye.
12. Because carbon element is a main component in their composition.
13. Because the viscosity of water is less than that of honey.
14. Because the density of cork is less than that of water, while the density of iron is greater than that of water.
15. Because its density is lower than that of air and it is non-flammable.
16. Because it is not affected by the change in temperature and does not react with rubber.
17. Because it is lighter than aluminum alone and retains its strength at high temperatures.

***(8) What are the results of the following :**

1. The atom is electrically neutral
2. Plants, soil, human health, animals, and the environment in general will be harmed.
3. The atomic number is equal to the mass number.
4. A homogeneous mixture (solution) is formed.
5. A heterogeneous mixture (solution) is formed.
6. It decomposes into its two elements (mercury and oxygen).
7. It decomposes into its two elements (hydrogen gas and oxygen gas).
8. Cork will float while iron nail will sink
9. The color of the litmus paper turns red.

*(9) Problems:

1	1. 1U 2. 18e 3. 118 4. 7 5. 18 6. 4 7. 4	8	1. alkali metals – monovalent 2. s-block																																																
2	<table><thead><tr><th></th><th>Electron configuration</th><th>Protons number</th><th>Neutrons number</th></tr></thead><tbody><tr><td>(1)</td><td></td><td>3</td><td>4</td></tr><tr><td>(2)</td><td></td><td>7</td><td>7</td></tr><tr><td>(3)</td><td></td><td>8</td><td>8</td></tr><tr><td>(4)</td><td></td><td>10</td><td>10</td></tr><tr><td>(5)</td><td></td><td>12</td><td>12</td></tr></tbody></table>		Electron configuration	Protons number	Neutrons number	(1)		3	4	(2)		7	7	(3)		8	8	(4)		10	10	(5)		12	12	9	1. Period 3 , group 2A 2. S-block																								
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حمل الآن

مجاناً وحصرياً

المراجعة رقم (5)

اختبار شهر اكتوبر



Lesson (1)

1 - What is meant by each of the following?

1. Matter	.....
2. The atom	.....
3. Fertilizers	.....
4. Atomic number	.....
5. Mass (nucleon) number	.....
6. Energy levels	.....
7. Isotopes	.....

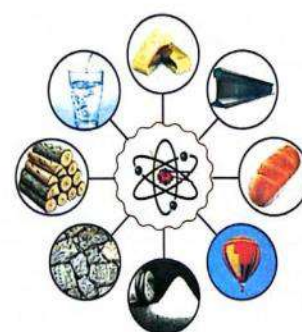
2 - Write the scientific term for each of the following :

1. Everything that has mass and volume and occupies a space (.....)
2. The building unit of matter (.....)
3. Developed the first scientific theory about atoms (.....)
4. New Zealand scientist won the Nobel Prize in Chemistry in 1908 (.....)
5. Positively charged particles found inside the nucleus (.....)
6. Particles whose charge can be neglected but whose mass is not (.....)
7. Particles whose mass can be neglected but whose charge is not (.....)
8. Compounds used to improve agricultural production (.....)
9. An element necessary for the greening of plant leaves (.....)
10. An element necessary for strengthening plant roots (.....)
11. An element necessary for healthy plant growth (.....)

3 - Study the following figures, then complete :

Figure (1)

- The components of the image are all similar in that they are called.....
- The reason?.....
- What are the states in which it exists?.....
- The corresponding materials are made up of smaller units, called.....which in turn are made up of smaller units called.....



5 - Complete the following tables :

Table (1)

P.O.C	Protons	Neutrons	Electrons
Position			
Charge			
Mass			

Complete : The ratio of the mass of an electron to the mass of a proton is one, while the ratio of the mass of a neutron to the mass of a proton isone.

Table (2)

Name of element in Latin	Its symbol	Name of element in English
Nitrogenium		
Natrium		
Kalium		
Carbo		
Calcium		
Cuprum		
Chlorum		
Hydrogenium		

Table (3)

Element	Symbol	Element	Symbol	Element	Symbol
Hydrogen	.....	Mercury	.....	.....	Li
Oxygen	O	.....	Ca	Sodium	.....
.....	N	Magnesium	.....	.....	K
Fluorine	F	.....	Fe	Copper	.....
Chlorine	.....	Lead	.....	Silicon	Si
.....	Br	Zinc	.....	Gold	.....
Iodin	.....	.....	S	.....	Ag
.....	C	Phosphorus	.....	Aluminium	.....
Helium	He	Neon	.....	.....	Ar

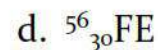
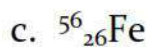
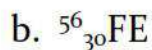
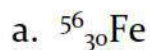
6 - Mention the importance of :

- The chemical symbol of elements
- The mathematical relationship $2n^2$

.....

.....

7. What is the chemical symbol of iron, knowing that its nucleus contains 26 protons and 30 neutrons?



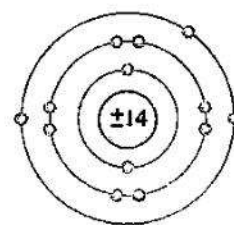
8. The atomic number of the opposite element is equal to.....

a. 13

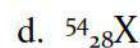
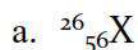
b. 14

c. 27

d. 35



9. Which of the following represents the symbol of one of the isotopes of element $^{56}_{26}\text{X}$?.....



9 - Answer the following questions :

1. If you know that the atomic number of sodium is 11 and its mass number is 23

Find: the number of electrons, the number of protons and the number of neutrons?

.....

2. An element has a mass number of 35 and 18 neutrons in its nucleus

Calculate: the number of protons

.....

3. An element has a mass number of 40 and 20 neutrons in its nucleus

Calculate the number of protons

Calculate: the number of electrons

.....

4. Element (X) has 13 protons and the number of its neutron is increased by one more than its proton Find:

a. Number of electrons

b. Number of neutrons

c. Number of electrons in the last energy level

.....

5. Element (Y) has electrons distributed in two energy levels, with its last energy level containing 4 electrons and its nucleus containing 6 neutrons

a. Draw the electronic configuration of the element

b. Find the mass number

c. Write the symbol for this element, explaining the numbers for A and Z

.....

Lesson (2)

I - What is meant by each of the following ?

1. Mendeleev's periodic table	.....
2. Moseley's periodic table	.....
3. Modern periodic table	.....
4. Metals	.....
5. Non-metals	.....
6. Semi-metals	.....
7. Noble gases	.....
8. Group number	.....
9. Period number	.....
10. Valence	.....

2 - Write the scientific term for each of the following :

1. A liquid metallic element	(.....)
2. A liquid non-metallic element	(.....)
3. The first element in the alkaline Earth group	(.....)
4. An inert gas located in the first period	(.....)
5. The smallest alkali metals in terms of radius	(.....)
6. The largest metals in terms of radius	(.....)
7. The least active elements of group 10	(.....)
8. The most active elements of group 7	(.....)
9. The halogens with the lowest melting and boiling points	(.....)

3 - To who these achievements are attributed ?

1. A scientist who arranged the elements in ascending order according to their atomic numbers
(.....)
2. A scientist who arranged the elements in ascending order according to their atomic masses
(.....)
3. A scientist who added the zero group to Mendeleev's table
(.....)

26. The radius isproportional to the atomic number of the elements in the same period
27. Boiling point of brominethan the boiling point of chlorine
28. Elements of the alkali group their chemical activityas we move from top to bottom
29. Elements of the halogen group their chemical activityas we move from top to bottom

5 - Give reason for each of the following :

1. Scientists have made numerous attempts to classify elements according to their properties?..
.....
2. Moseley rearranged the elements in ascending order according to their atomic numbers?....
.....
3. Calcium ($_{20}\text{Ca}$) is a metal, while chlorine ($_{17}\text{Cl}$) is a non-metal?.....
.....
4. Semimetals cannot be identified from their electronic distribution (structure)?.....
.....
5. Sodium ($_{11}\text{Na}$) is one of the alkali metals?.....
.....
6. Calcium ($_{20}\text{Ca}$) is one of the alkaline Earth metals?.....
.....
7. Fluorine ($_{9}\text{F}$) is one of the halogens?.....
.....
8. Elements in the same group have similar chemical properties?.....
.....
9. $_{20}\text{Ca}$ and $_{4}\text{Be}$ are in the same group?.....
.....
10. $_{12}\text{Mg}$ and $_{16}\text{S}$ are in the same period?.....
.....
11. Both $_{13}\text{Al}$ and $_{17}\text{Cl}$ are located in the same period?.....
.....
12. The valency of $_{11}\text{Na}$ and $_{17}\text{Cl}$ is monovalent?.....
.....
13. The valency of alkaline earth metal is divalent?.....
.....
14. The valency of halogens is monovalent?.....
.....

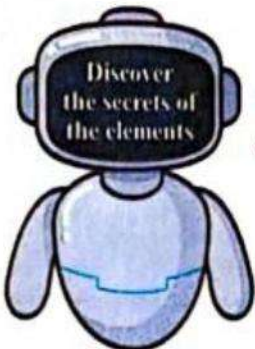
5. Alkaline Earth elements (in terms of chemical activity)?.....

8 - Complete the following tables :

Table (1)

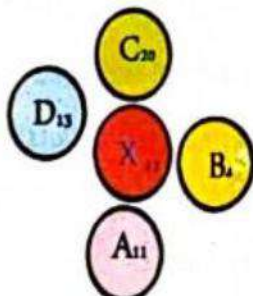
P.O.C	s-block	p-block	d-block
Location			
No. of groups			

Table (2)

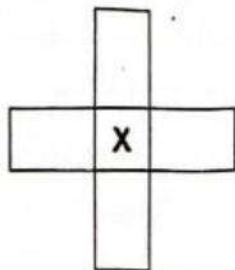


Discover the secrets of the elements

The opposite figure shows the symbols of some elements and their atomic numbers



Put each element's symbol in the right place in the following table, which is part of the modern periodic table

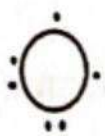


Previous letters do not represent the true symbols of the elements

Group number	.....	7A	.....	1A
Group name	Nobel gases	.....	Alkaline earth	.....

Table (3)

Through your understanding of Lewis structures, complete the following table:

The element	Ne ₁₀	O ₈	Li ₃
Electron configuration	K=2 L=8	.....	.....
Lewis structure	.....		.....
Valency	.....	.....	Monovalent

5. The following figure represents a section in the periodic table :

[illegible]

Which of the following is the correct electron configuration for the mentioned element?.....

- a. Element (W) : 2,8, 1
b. Element (X) : 2, 4
- c. Element (Y) : 2,8,2
d. Element (Z) : 2,8

6. Which of the following choices represents the two metals lithium and potassium?.....

Choices	Metal with higher melting point	More reactive metal with water
(a)	Lithium	Lithium
(b)	Lithium	Potassium
(c)	Potassium	Lithium
(d)	Potassium	Potassium

7. The following figure illustrates some groups of the periodic table :

A	B			C	D
---	---	--	--	---	---

Which of the following is correct about the elements in these groups?.....

- Group (A) : Monovalent nonmetals
- Group (B) : Their atomic radii decrease with increasing the atomic number
- Group (C) : The physical states of its elements are not the same
- Group (D) : Octavalent nonmetals

8. Which of the following represents the expected melting and boiling points of mercury?.....

Choices	Melting point	Boiling point
a.	38.83 °C	356.7 °C
b.	-38.83 °C	-356.7 °C
c.	38.83 °C	- 356.7 °C
d.	- 38.83 °C	356.7 °C

Lesson (3)

I - What is meant by each of the following?

1. Pure substances	.....
2. Elements	.....
3. Compounds	.....
4. Molecular formula	.....
5. Organic (carbon) compounds	.....
6. Inorganic compounds	.....
7. Mixtures	.....
8. Homogeneous mixtures (solutions)	.....
9. Heterogeneous mixtures	.....
10. Physical properties of matter	.....
11. Viscosity	.....
12. Aerogel	.....
13. Boiling point	.....
14. Melting point	.....
15. Chemical properties of matter	.....

2 - Write the scientific term for each of the following :

1. A substance consisting of two or more materials that are not chemical combined (.....)
2. The simplest pure form of a substance whose components cannot be separated by physical or chemical means (.....)
3. A pure substance formed as a result of the chemical combination of two or more elements in a fixed mass ratio, whose components can be separated by chemical means (.....)
4. A symbolic formula that expresses the type and number of atoms of the elements that make up the molecule (.....)
5. Mixtures whose components can be distinguished with the naked eye (.....)
6. Properties that can be observed and some of which can be measured (.....)
7. Properties that only appear when a chemical reaction occurs that leads to a change in the shape and structure of the substance (.....)

5 - Correct the underlined words in the following sentences :

1. Methane is considered an inorganic compound (.....)
2. Oxygen is considered a mixture (.....)
3. A table salt solution can be separated by filtration (.....)
4. Density and melting point are chemical properties of matter (.....)
5. Heterogeneous mixtures cannot be separated physical means (.....)
6. Helium is used to fill car tires (.....)

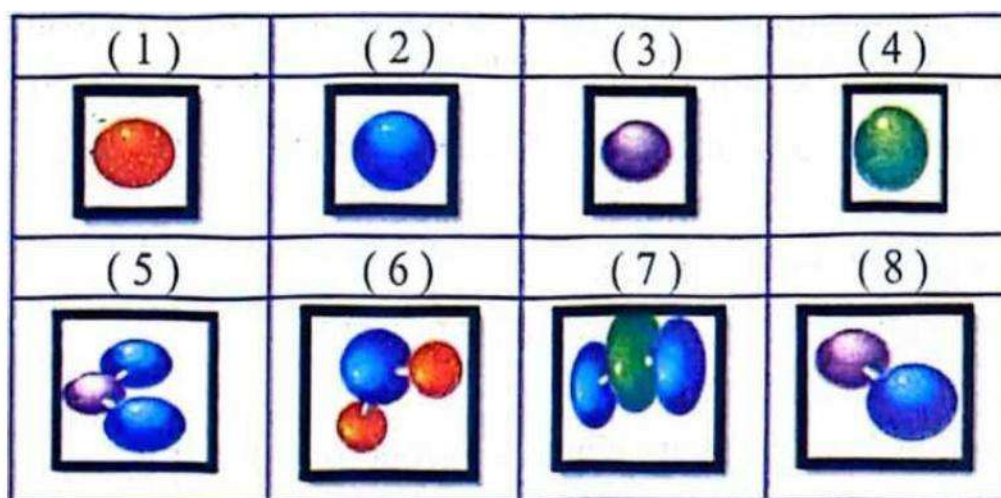
6 - Give reason for each of the following :

1. A hydrogen molecule is considered an element?.....
.....
2. A sodium chloride molecule is considered a compound?.....
.....
3. Nitric acid is considered an inorganic compound molecule?.....
.....
4. Vitamin D is an important vitamin for the human body?.....
.....
5. Sea water is considered a homogeneous mixture?.....
.....
6. Iron filings can be easily separated from flour?.....
.....
7. Wood floats on water, while iron sinks?.....
.....
8. Aerogel is used to make jackets for research scientists in Antarctica?.....
.....
9. Helium gas is used to fill balloons?.....
.....
10. Nitrogen is now used to fill car tires instead of air?.....
.....
11. Stainless steel alloy is used in the manufacture of cooking utensils?.....
.....
12. Aircraft structures are made of aluminum alloy and titanium?.....
.....

7 - What happens when?

1. Heating a red mercury oxide compound?.....
.....
2. Electrolysis of acidified water?.....
.....
3. Place a piece of wood in water?.....
.....
4. Dipping litmus paper in lemon juice?.....
.....
5. Manufacture of iron cooking utensils?.....
.....
6. Use of carbon dioxide gas to fill balloons?.....
.....

8 - Observe the following figures and answer the following questions :



1. Figure no.....represents CO_2 molecule, while figure no..... represents H_2O molecule
2. Figure no.....represents an oxygen atom, while figure no.....represents a carbon atom
3. Figure no.....represents a hydrogen atom, while figure no.....represents a sulfur atom
4. Shape number....represents a sulfur dioxide molecule, while shape number.....represents a carbon monoxide molecule.

9 - Give one difference between the following :

1. Oxygen molecules and water molecules. In terms of :
 - Molecule type

.....

5. All the following are physical properties of a piece of calcium carbonate, except that it.....

- a. is solid
- b. does not dissolve in water
- c. is white in color
- d. produces gas bubbles with vinegar

6. One of the chemical properties of sodium carbonate is that, it.....

- a. dissolves in water
- b. produces gas bubbles with lemon
- c. is a good electrical conductor
- d. has a high melting point

7. The following table shows samples of different substances :

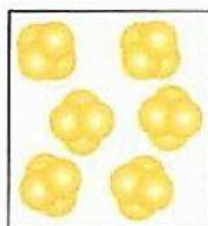
Sample	Shiny	Flexible	Conducts electricity
(1)	x	x	✓
(2)	✓	x	x
(3)	x	✓	x
(4)	✓	✓	✓

Which sample its substance can be used in making water hose?.....

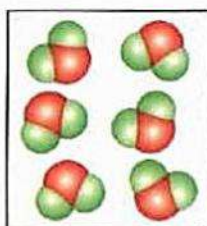
- a. Sample (1)
- b. Sample (2)
- c. Sample (3)
- d. Sample (4)

I4 - Study the following figures, then answer :

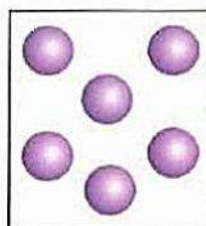
1. Classify the following samples of molecules into two groups with explanation



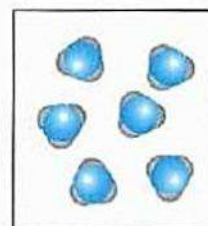
(1)



(2)



(3)



(4)

.....

.....

.....

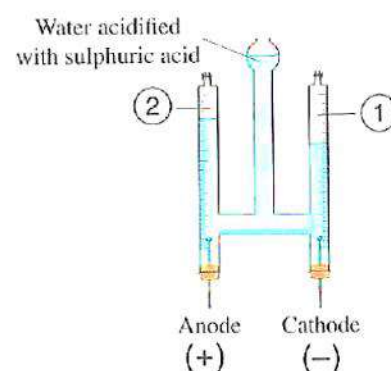
2. From the opposite figure :

- a. What is the name of the device shown in the figure?
- b. What is its use?
- c. Write the items indicated by the numbers (1) and (2)

.....

.....

.....



THANK YOU

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9

